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UNIVERSITY OF ILLINOIS

THE FUTURE OF THE MINISTRY OF WORKS

AMONG many interesting queries as to the future of the building industry, one of the most arresting and in some respects vital is what are to be the future functions and therefore the constitution of the Ministry of Works?

Obviously, a great number of the present functions of this body will gradually cease as we proceed from a condition of war to one of peace. Such sections as "Emergency Work," "Supplies Division," "Control of Materials Section" and "Licensing Division" are mainly for war time, and although some of these may be an unconscionable time adying, they will certainly sooner or later cease to be. What then? Is the Ministry to relapse into the functions exercised by the Commissionership of Works before the war, dealing only with Government-owned buildings and ancient monuments, or is it to continue on a very much larger scale on modern lines, guiding such matters as the organisation and structure of the industry, registration, methods of construction, employment and conditions of labour, etc., even though clearly unlikely to function on as great a scale as it does at present? On the answer to this question depends the question of its constitution.

In saying this we do not depreciate the value of the work done by the Ministry in war time, but we believe that few would claim, even in the Ministry itself, that its constitution is ideal.

In this respect it must be remembered that the Office of Works was a comparatively small body pre-war. It is doubtful, in fact, whether its normal turnover exceeded that of a large county council, such as the L.C.C. The necessary expansion of the organisation to deal with an enormous mass of work in war time, much of it of a nature with which its officials were not familiar, was obviously a matter of considerable difficulty, and it is hardly surprising that the machinery creaked at times and that co-ordination between the various divisions was by no means perfect. The same was true in varying degrees, and was bound to be true, with regard to all Government Departments which had to handle suddenly a vastly increased load. The problem was probably easiest with regard to entirely new departments which started with a clean sheet, and with no dead hand of precedents or routine not applicable to war-time conditions.

If, then, the Ministry is to revert to its old status and is to handle only the same type of work as before, though admittedly in greater quantity owing to war damage, its original constitution will possibly be good enough. If, however, it is to function as a large Ministry, the question is entirely different.

It may be useful to trace its history. Originally the First Commissioner of Works was a Court official who dealt with the maintenance, redecoration and occasional extension of the Royal Palaces. Having received the Royal command he delegated the work to staff mechanics, foremen and clerks of works. In fact, the system was the same as with the great houses of the nobles, Chatsworth, Knole or Arundel, where a regular staff was always maintained for a similar purpose, a habit which survived well into the 19th century. In the case of a notable extension such as that of Hampton Court in the reign of William the Third, a prominent outside architect, in that case Sir Christopher Wren, was called in, and frequently the honorary title of Royal Surveyor was bestowed. Nevertheless, the normal system was that of an estate works organisation under the orders of a non-technical person. Needless to say, during the last hundred years this system has become entirely nugatory, yet the theory still persists. The technical officers of the Ministry of Works function, strictly speaking, merely as advisers and assistants to the Secretariat who are entirely non-technical and therefore cannot judge the corrrectness or value of the advice given them.

We would submit that this system under modern conditions is entirely wrong. The Ministry of Works is not and cannot be an advisory Ministry, as are the Ministry of Health, the Ministry of Education or the Ministry of Agriculture. It is an operational Ministry as are the War Department, the Admiralty and the Air Ministry. If it was suggested that either in war or peace the technical officers of those three departments should be entirely subordinate to the civil officials the suggestion would rightly be scouted.

This, however, is the case with the Ministry of Works. Is it, in practice, any less absurd? If the Ministry is to be responsible, at any rate in the immediate post-war period, for the organisation and structure of the industry in the widest sense, including questions of methods of construction, employment and conditions of labour and many other technical subjects, is it reasonable that those with technical knowledge on its staff should be able to act only in a subordinate capacity, and final decision rest with persons without any technical knowledge? Do any other operational departments function in such a way, and can success in the very difficult times which lie ahead be predicted under such a system?

We would suggest that the chief technical officers should be given an equal authority with the Secretariat, and not continue to be merely their servants. Under such a system we believe that the Ministry could be of great value in the future of the country, in which building must necessarily play a great part. Under the old system it would probably relapse into its old position of a Commissionership of Works, and what might have been a very valuable co-ordinating and guiding body would be lost.

NOTES AND NEWS

New Minister of Works Appointed.

THE KING has appointed Mr. Duncan Sandys, M.P., to be Minister of Works in the place of Lord Portal, who followed Lord Reith as Minister in 1942.

In a letter to Lord Portal, Mr. Churchill, in stating that he has come to the conclusion that the office of Minister of Works must at this juncture be held by a Minister in the House of Commons, thanks him for "the excellent manner in which you have discharged a number of heavy and important tasks."

Mr. Duncan Sandys, who is M.P. for the Norwood Division of Lambeth, was in the diplomatic service from 1930-1937. He has been Joint Parliamentary Secretary to the Ministry of Supply and Chairman of the Flying Bomb Counter-Measures Committee. He is 36, and becomes the youngest member of the Cabinet.

The Architect and Building Organisation.

AN informal general meeting will be held at the R.I.B.A. on Tuesday, December 12 next, at 5.30 p.m., when there will be a talk on "The Architect and Organisation of Post-War Building" by Mr. T. P. Bennett, C.B.E., F.R.I.B.A., followed by a discussion.

House-Builders' Registration.

SINCE the publication of the Report on "The Placing and Management of Building Contracts," the Ministry of Works have accepted the invitation of the National House-Builders' Registration Council to appoint Observers to sit in at meetings of the Council and its Committees. They have appointed Mr. C. J. Mole, Director of Works; Mr. J. A. Hamlyn, Assistant Director of Works; and Mr. E. J. Muir, Assistant Secretary. The Ministry of Health have also increased the number of their Observers. In the future these will be: Mr. S. Pointon Taylor, Chief Housing Architect; Mr. C. R. Kerwood, Assistant Secretary; and Mr. N. C. Rowland, Principal.

London Housing Repairs.

WORK is proceeding at a steady rate on the work of repairing bomb-damaged houses in London. Since the beginning of October, 50,000 men—operatives and labourers—have been drafted into the London region, making a total on housing of 115,000, and every effort is being made to arrive at a balance of two craftsmen to one labourer. There is now (a correspondent informs us) no case for complaints of shortage of materials. Principal shortages have been experienced in plasterboard, tiles, large slates and plaster. In some cases those shortages continue, but if available substitutes or alternatives are taken into account (*e.g.*, wallboard for plasterboard and smaller-size slates for large slates) there is no reason for any job being held up for materials. The shortage of doors is temporary only. Builders have been asked to plan their work and order their materials three weeks ahead; this is especially necessary in the case of timber, of which there is a fully adequate supply—not, however, pre-cut to size.

The War Damage Commission is about to issue the new Form of Contract, already announced, while another new development is the setting up of consultative machinery in each borough to avoid bottlenecks of labour or materials. Such machinery has been set up already in Leyton and Wimbledon, and consists not in a formal committee but rather in continuous liaison between the builders in charge, representatives of the Operatives and Material Suppliers, and the Borough Surveyor. Such machinery is welcomed by the War Damage Commission, it is understood, and has already shown remarkable results.

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Communal Work Buildings.

IN his annual report as Chief Inspector of Factories (Cmd. 6563, Stationery Office, 1s.) Sir Wilfrid Garrett draws attention to a development in industrial planning that may lead, he thinks, to a revolution in the conditions of certain industries. Proposals are going ahead to construct on bombed sites or elsewhere what he describes as communal factory buildings, blocks of well-designed rooms with good factory amenities which can be let to the smaller type of manufacturer who, in the past, has been driven by economic necessity into dilapidated domestic property unsuitable for factory purposes. In these blocks a communal canteen can be placed on the top floor, and a roof garden as well.

Engineers' War Service Committee.

THE Council of the Institution of Civil Engineers have set up a special War Service Committee to deal with the cases of prospective candidates for election whose engineering training has been interrupted by the war, with a view to these candidates being advised in regard to the periods of practical training and/or engineering experience and the Examination qualifications they will be required to obtain before the Council will consider them qualified for election to Corporate Membership of the Institution. The Council are of the opinion that a statement setting out these requirements may be of service to a young engineer in connection with his reinstatement in civilian employment. Intending candidates for election who are serving in H.M. Forces, or who have been directed into work of national service, and who were under the age of 31 on November 1 last, should apply to the secretary at Great George-street, S.W.1, for particulars.

MR. DUNCAN SANDYS, M.P., whose appointment as Minister of Works was announced on Wednesday.

Repairs in Gibraltar and Malta.

AN appeal for £100,000 to repair and extend the cathedral centres at Gibraltar and Malta has been opened under the signatures of the late Dr. Temple, Archbishop of Canterbury, and others. The plan provides for the repair of the bomb-damaged cathedral at Malta, the building at both places of social centres for men in the Services, and the furnishing in St. Paul's Cathedral, Malta, of a shrine of remembrance to the memory of British men and women who gave their lives in defence of the island. Contributions should be sent to the Bishop of Gibraltar, Malta and Gibraltar Fund, 35, Great Peter-street, London, S.W.1.

Architect Awarded M.B.E.

THE M.B.E. has been awarded to Major R. J. Bayne Christie, R.E., A.R.I.B.A., for gallant and distinguished services during the operation in Burma between June and November, 1943.

County Architect Appointment.

WORCESTERSHIRE COUNTY COUNCIL is to terminate the agreement with Messrs. Henry Rowe and Son, acting county architects, at the end of May, 1945, and to appoint a county architect at a salary scale rising to £1,200.

Warwickshire County Architect.

THE services of Mr. A. C. Bunch, F.R.I.B.A., Warwickshire County Architect, terminate in March, 1945, on his attaining the age of 66. A successor will be advertised for at £1,400 per annum, rising in four years to £1,600. The County Council records "the debt we owe to Mr. Bunch for his many years of devoted service to the Council."

The late Mr. Oswald Healing, P-P.S.I.

WE regret to record the death, which took place on November 19, of Mr. Oswald Healing, of the firm of George Corderoy and Co., quantity surveyors. Mr. Healing was a Past-President of the Chartered Surveyors' Institution.

A Surveyor's Estate.

MR. C. H. BEDELLS, P-P.S.I., left £24,882 (net personalty £17,836).

Professional Announcements.

MR. ARTHUR J. WILLIS, chartered quantity surveyor, has removed to 41-42, Parliament-street, S.W.1 (Whitehall 4242), and would be pleased to receive trade catalogues or lists.

MR. C. E. GEORGE, A.R.I.B.A., Architect to the Rural District Council of Blofield and Flegg, Council Offices, Acle, Norwich, will be glad to receive current trade catalogues and literature in connection with post-war housing construction, materials and fittings.

COMPETITION NEWS

Design of Terrace Houses.

The Executive Committee of the National Housing and Town Planning Council announce that 38 designs were received for the architectural competition for the design of blocks of terrace houses suitable for erection in towns, and the award made by the assessor (Mr. Louis de Soissons, A.R.A., F.R.I.B.A.) is as follows :—

1st Prize (£125) : G. K. Findlay, 35, Wesley-avenue, N.W.10.

Five Prizes of £30 each to the following : Courtenay M. Crickmer, F.R.I.B.A., M.T.P.I., 1 Lincoln's Inn-fields, W.C.2; Captain J. R. Baxter, Auchencairn, Rosemount, Blairgowrie, Perthshire; V. Collier, L.R.I.B.A., and R. Davies, A.R.I.B.A., Rose Bank, 13, Duke's-brow, Blackburn, Lancs; F. W. Holder, B.A. (Arch.), A.R.I.B.A., Room 604, Ministry of Works, Abell House, John Islip-street, S.W.1; and L. B. Elson, 21, Haywood-road, Mapperley, Nottingham.

A further announcement will be made as to an exhibition of some of the designs in due course.

Wexford Bridge Competition.

The awards have now been made in a competition for a reinforced concrete bridge for the Wexford County Council. The first prize (£500) has been awarded to Mr. W. J. L. O'Connell, of Cork. The second prize (£300) has been awarded to Mr. W. A. Fairhurst, of Glasgow, and the third prize (£200) to Mr. James J. Roughan, of Dublin. Forty-four designs were submitted. The assessors were Professor H. N. Walsh (University College, Cork). Mr. Nicholas O'Dwyer (Dublin), and Mr. W. F. Barry, former County Surveyor of Wexford. The new bridge, 380 yd. in length, will be the longest reinforced concrete bridge in Ireland.

From *The Builder* of 1844.

Saturday, November 23, 1844. *Price* 3*d.*

A VESTRY MEETING OF THE PARISH OF St. Pancras has been held for the purpose of considering the application on the part of a body of the inhabitants of Highgate, to be permitted to divert the roadway, alter the drainage and make such other improvements in the Highgate ponds as would be conducive to the better health and comfort of the neighbourhood.

COMING EVENTS

Tuesday, November 28.

UNIVERSITY OF LONDON. Third Lecture on "The Principles of Organisation and Management as Applied to the Building Industry," by Mr. T. P. Bennett, C.B.E. London School of Hygiene, W.C. 5.30 p.m. (details in our issue for October 27).

HOUSING CENTRE. Mr. W. A. Allen on "Lighting in Dwellings." 13, Suffolk-street, S.W.1. 1.15 p.m. (buffet lunch, 12.45 p.m.).

ARCHITECTURAL ASSOCIATION. Miss Judith Ledeboer, A.R.I.B.A., on "Housing and the Architect." 36, Bedford-square, W.C.1. 6 p.m.

INSTITUTION OF CIVIL ENGINEERS. Mr. A. Shaw Maclaren on "Design of Land Airports for Medium and Long Distance Civil Air Transport." Great George-street, S.W.1. 5.30 p.m.

Wednesday, November 29.

INSTITUTE OF WELDING. Mr. W. Riddihough on "Handsurfacing by Welding." At Institution of Civil Engineers, S.W.1. 6 p.m.

ARCHITECTURAL SCIENCE BOARD. Dr. N. Davey on "Concrete : Its Appearance and Durability." 66, Portland-place, W.1. 5.30 p.m.

Thursday, November 30.

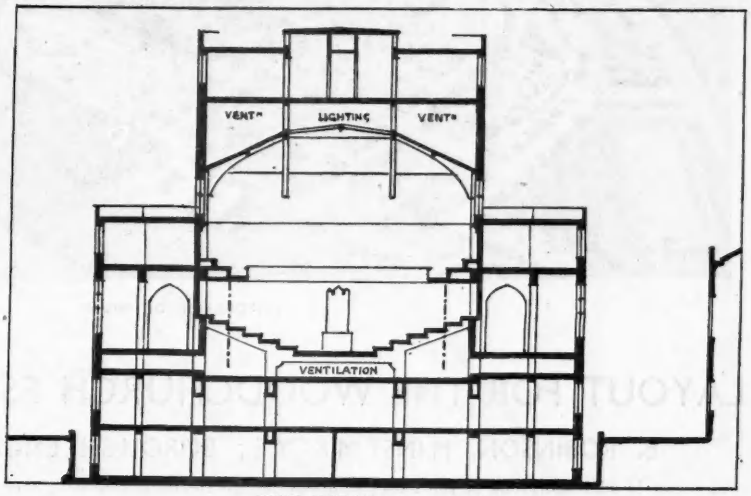
FEDERATION OF ASSOCIATIONS OF SPECIALISTS AND SUB-CONTRACTORS. Luncheon to Lord Portal. Dorchester Hotel, W.1. 1 p.m.

TOWN AND COUNTRY PLANNING ASSOCIATION. Sir Miles Thomas, D.F.C., on "Town Planning and the Car Owner." 2, Savoy-hill, W.C.2. 1.15 p.m. (buffet lunch, 12.45 p.m.).

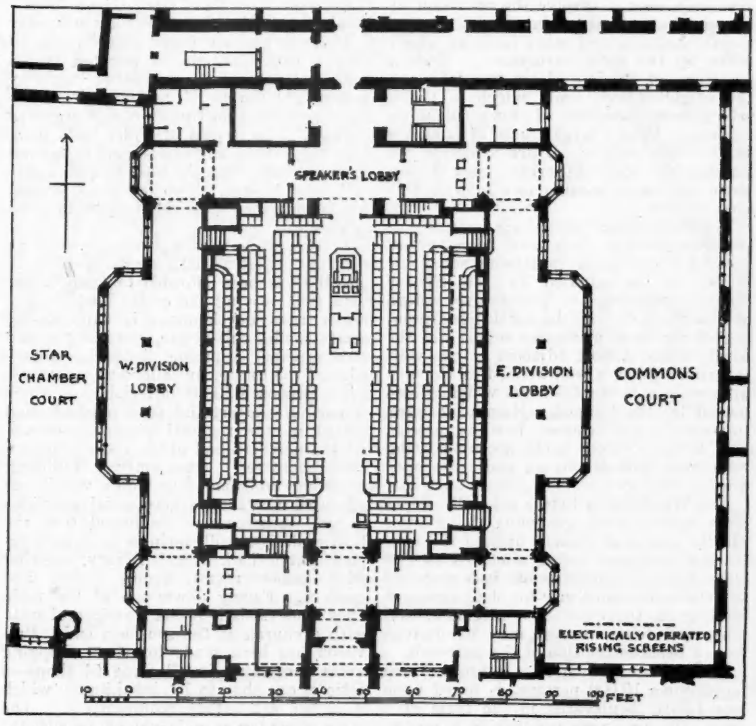
THE HOUSE OF COMMONS

SUGGESTION TO ALLOW EXTENSION AT WILL OF MEMBERS' SEATING.

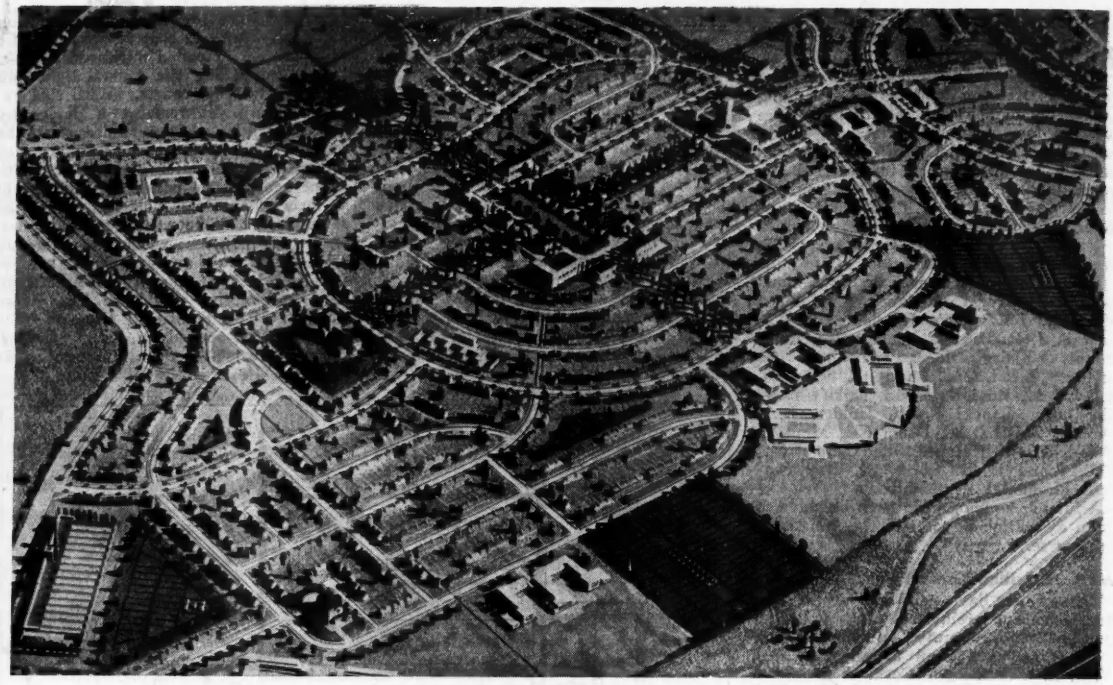
THERE has been worked out, and is given on this page, a practical solution to the problem of how additional seating for Members of the House may be provided without detriment to the intimate character of the plan. The suggestion was first made in our leading article of November 17, of which the following is an extract : "An increase of the width of the building from 46 to 58 ft. would enable about 100 more Members to be accommodated without detriment to the intimate character of the plan, and the vision of speakers from the galleries would also be improved. This need not reduce the area of the division lobbies, as the three central bays of these could also be extended outwards without unduly diminishing the general light and air in the external courts. With this expansion there yet remains a device by which the floor of the House could be reduced to its present dimensions when preferred. Immediately behind the fifth tier of benches the panelling could be in the form of shutters, electrically operated to rise from the floor level to the underside of the galleries; when these were up the House would have exactly its present appearance except that the overhang of the side galleries would be less; when down, the two additional tiers on each side would be opened up, giving the 100 additional seats; the operation would take only a minute or so."



CROSS SECTION, *Below:* PLAN.


SPEAKER'S LOBBY
STAR CHAMBER COURT
W. DIVISION LOBBY
E. DIVISION LOBBY
COMMONS COURT
ELECTRICALLY OPERATED RISING SCREENS
10 0 10 20 30 40 50 60 70 80 90 100 FEET

THE NEW HOUSE OF COMMONS : Suggested Revision of Plan to Permit the use of 100 extra Seats for Members.



PHOTOGRAPH OF MODEL.

LAYOUT FOR THE WOODCHURCH ESTATE, BIRKENHEAD

B. ROBINSON, M.INST.M.&CY.E., BOROUGH ENGINEER AND SURVEYOR

HOUSING is admittedly one of the most urgent problems of the post-war years. Not only does it involve the provision of houses, but all the educational, recreational, shopping and other facilities which make up the social structure. Modern consensus of opinion relates this fabric to the neighbourhood units which in themselves form sections of town planning schemes. Where large tracts of land are in the ownership of, or are available for purchase by, local authorities, they are enabled to design housing estates with this goal in view.

The Birkenhead Council are fortunate in possessing within their own boundary an area of virgin land containing some 457 acres. It is situated in the Fender Valley, adjoining the picturesque village of Woodchurch. To the north lies Upton, one of the most attractive suburbs of the town, whilst almost adjacent to the west is Arrowe Park, a well-wooded estate with a mansion of some 425 acres which is also owned by the Council. Here have been provided a golf course, bowling greens, and tennis courts, fields accommodating numerous football pitches and large open area for children.

The Woodchurch Estate generally slopes from east to west, gradually rising some 115 ft., and is at present utilised for agricultural purposes, being allocated as two large farms. Upon this site it is proposed to develop a garden city for the purpose of housing on the basis of a neighbourhood unit, and some interest may be derived from a brief description of the proposals.

The scheme, which it is estimated will house some 10,000 persons, is based upon two 100-ft. boulevards in the form of a cross, the two axes meeting in a central square. Planted with appropriate trees of sufficient foliage commensurate with their width, these cross boulevards have given the scheme the title of the "Green Cross" Estate. Around this central feature runs a 60-ft. boulevard from which roads of similar width radiate at selected points and intervals of the existing highway system. At the north, generally demarcating the estate from Upton, runs a proposed by-pass. This is part of wider town planning suggestions and is designed to deviate through traffic from the busy shopping area of Upton Village. Two boulevard entries will be provided from this by-pass into the new estate.

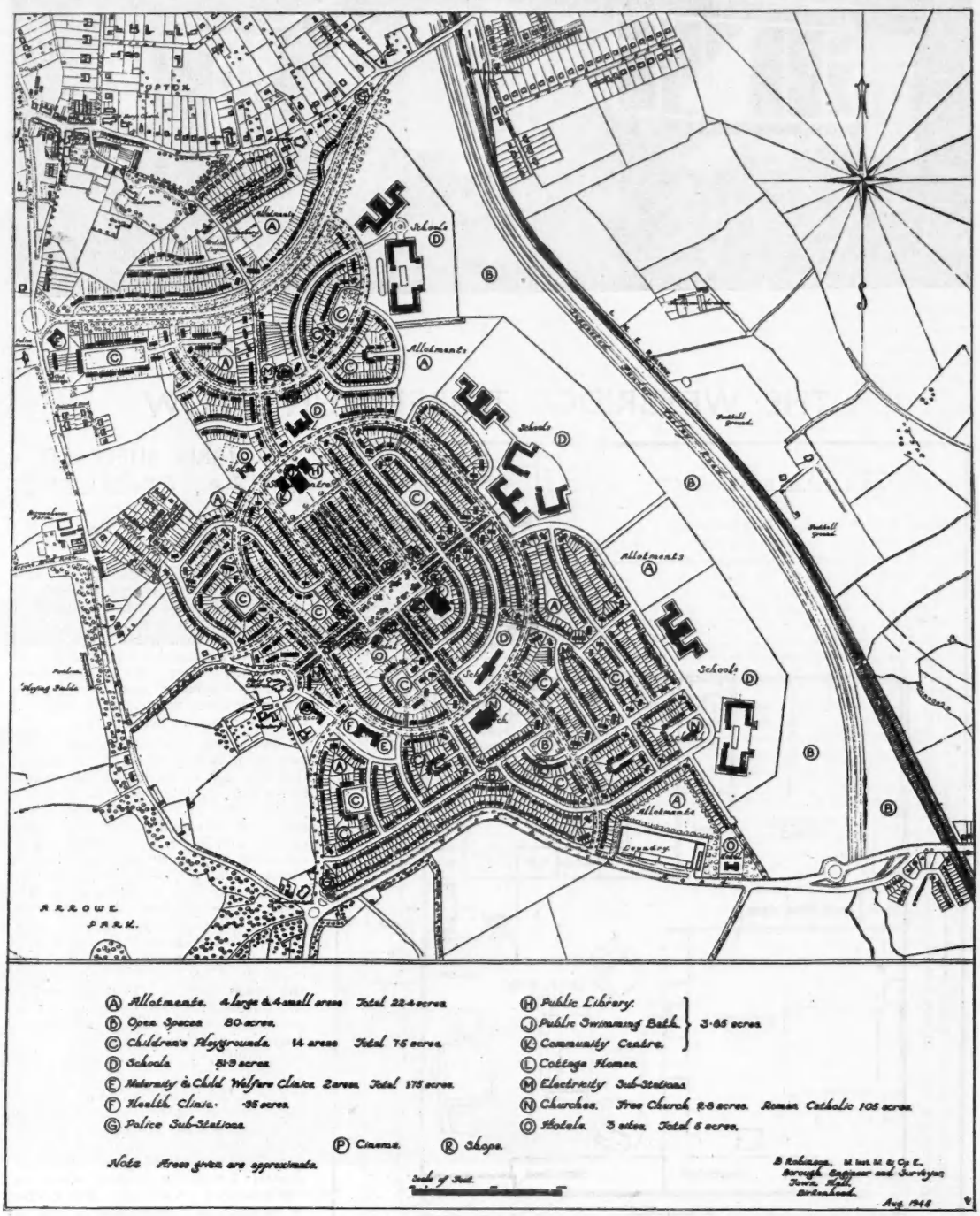
Tracing this new pattern, it will be recognised that as little encouragement as possible has been afforded to traffic other than that serving the estate itself. The minor road development is supplied by estate roads, culs-de-sac, quadrangles and embayments. Running along the eastern edge of the estate, but affording no access, lies a proposed 120-ft. arterial road which is part of the arterial road network suggested in the regional planning scheme. At the northern end of the cross is sited a comprehensive community building. Standing on some four acres which are allocated for the various social activities it will encompass, it is hoped that the future design will include a swimming-pool, public hall, branch library, together with games rooms, tennis courts and gardens. Facing down one of the main axes boulevards it forms a reciprocal vista with a church at the southern end. Provision has been made for three shopping areas containing in all some 64 shops—a ratio of one shop to 156 inhabitants, which it is felt will satisfy requirements. The main shopping area is placed around the central square which is 650 ft. by 500 ft. enclosing a green reservation. Here, also, balancing each other are sites for a cinema and an hotel, each having vistas along the boulevards which they face, to other buildings at the farther end. Branch shopping centres to the north and south will give immediate convenience as sequence development necessitates. Conferences with the ecclesiastical authorities resulted in sites for two churches being allocated which have been so placed as to satisfy their individual needs.

Near the roundabout, where the Upton by-pass crosses the existing Arrowe Park-road, a site for a clinic is earmarked. Additionally, a further island site of two acres, near Woodchurch Village, is reserved for a clinic and health centre of a more ambitious nature to serve teh southern portion of the estate. Educational requirements as far as can be visualised from modern standards, have been amply provided for. A Young Peoples' College, secondary and junior schools, and nursery schools have had in all some 83 acres allotted to their sites and playing-fields. The first named is suggested at the end of the east/west axis, providing a fine vista up to Woodchurch church, a building of some antiquity. Nursery schools are distributed within the estate, but the main school areas have been placed along the eastern boundary adjacent to a continuous open space. Four small and four large areas of allotments are given a place. Altogether approximately 22.5 acres are shown providing some 315 allotments, equivalent to one to every 7½ houses. Along the eastern fringe an area of 76 acres provides an open space running co-extensive with the whole boundary. Through this runs the Fender Valley Stream, which will enable a streamside

walk to be provided. It is hoped that this will extend into the County Borough of Wallasey in the north and nearly two miles southwards through Birkenhead, ending in the Wirral Urban District, thus forming a distinctive co-ordinated town planning feature.

Some 14 small areas totalling nearly eight acres, are distributed within the interior for the use of younger children. In addition, the vast recreational facilities of Arrowe Park, already referred to, are almost on the doorstep of the estate. Semi-detached or grouped in limited rows as occasion demands, some 2,500 houses are visualised. Broadly speaking, the net residential density including half road works out at 13 per acre, the gross area resulting in six per acre. Retaining the southerly aspect of the houses adjacent to the Upton By-pass resulted in the rear gardens facing on to this important thoroughfare. A screen belt of trees some 50 ft. wide is, therefore, included on both sides to balance this feature and to preserve the privacy of the house gardens. Service roads have been provided where development fronts on to highways subject to restriction of access.

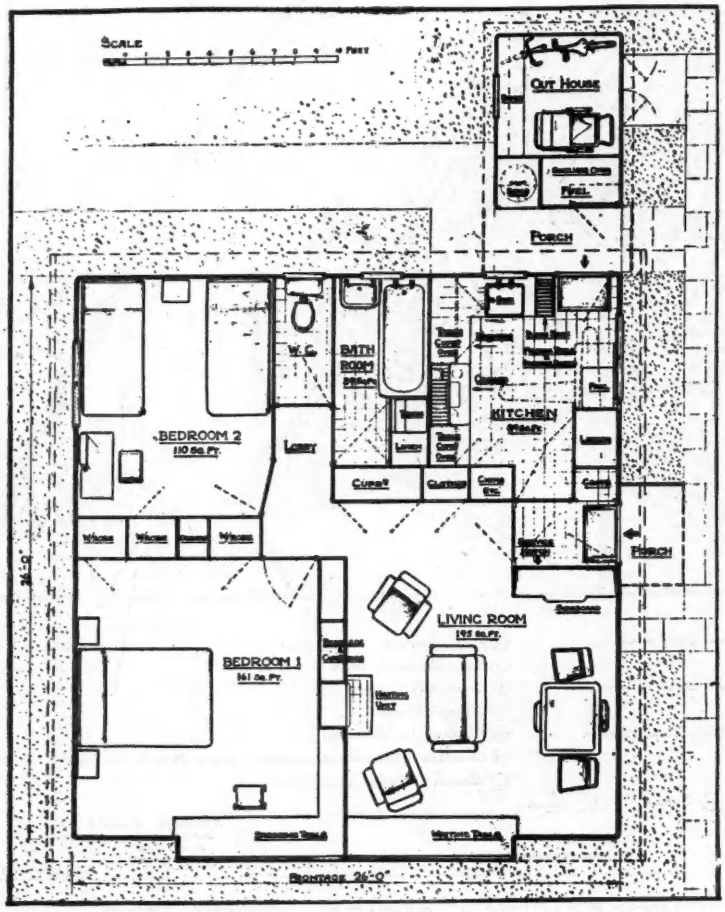
A photograph is given of a scale model of the whole of this estate which has been made voluntarily by several members of the Borough Engineer and Surveyor's staff. The model is some 10 ft. by 8 ft. Existing buildings are models of the actual. Proposed buildings were modelled from designs, but both these and the houses are naturally representational. It embodies all the features contained in this brief description.


UPTON
Schools
Allotments
Schools
Allotments
Schools
Allotments
Laundry
ARROWE PARK
Bypass under Railway Link
Football Ground
Football Ground
Playing Fields
(A) Allotments. 4 large & 4 small areas Total 22·4 acres.
(B) Open Spaces 80 acres.
(C) Children's Playgrounds. 14 areas Total 7·5 acres.
(D) Schools 8·9 acres.
(E) Maternity & Child Welfare Clinics 2 areas Total 1·75 acres.
(F) Health Clinic. ·35 acres.
(G) Police Sub-Stations.
(H) Public Library.
(J) Public Swimming Bath.
(K) Community Centre.
} 3·85 acres.
(L) Cottage Homes.
(M) Electricity Sub-Stations.
(N) Churches. Free Church 2·6 acres. Roman Catholic 1·05 acres.
(O) Hotels. 3 sites. Total 6 acres.
(P) Cinema. (R) Shops.
Note Areas given are approximate.
Scale of Feet.
B. Robinson, M. Inst. M. & Cy. E., Borough Engineer and Surveyor, Town Hall, Birkenhead.
Aug. 1944

LAYOUT FOR THE WOODCHURCH ESTATE, BIRKENHEAD.

VIEW OF EXTERIOR.

THE WEYBRIDGE TIMBER BUNGALOW



THE PLAN.

RICHARD SHEPPARD, F.R.I.B.A., CONSULTING ARCHITECT

THE WEYBRIDGE HOUSE, PLAN AND illustrations of a prototype of which are reproduced in these pages, is intended as a contribution to the housing problem in more than a temporary sense, for it has an anticipated durability of 25 years. Every attempt has been made, by cupboard space and labour-saving devices, to make the most of the floor space of 600 sq. ft.

Constructed in eight sections in the factory, it is easy to erect. Houses of this type can be manufactured entirely in the factory, delivered in sections to a prepared concrete site and erected in a day. The material is a sandwich-like construction $1\frac{5}{8}$ in. thick, consisting of an outer and inner layer of plywood bonded to a compressed wood fibre insulating core with synthetic resin. The result is a product for which are claimed great strength, rigidity, lightness, and the additional qualities of fire- and heat-resistance with sound insulation. The transmittance value of the walls is .15. The material is weatherproof. The exterior can be pebble-dashed, scumbled, or left as varnished wood, while the interior may be polished, distempered, painted or papered.

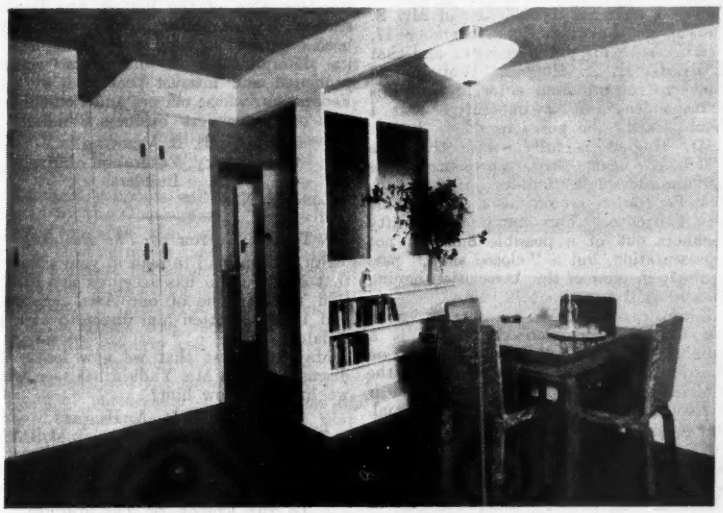
The heating and cooking arrangements are by coal, gas or electricity, or a combination of these. The designers have made provision for the coal fire by installing a hidden receptacle beside the fireplace where coal can be stored out of sight. The kitchen is compact and economical in the use of space.

The house is entered through a covered porch opening into a lobby corridor which gives access to all the rooms. These rooms include a living-room which is 12 ft. by 12 ft. 9 in.; a principal bedroom measuring 12 ft. 6 in. by 11 ft. 7½ in. and second bedroom of 11 ft. 3½ in. by 9 ft. 4 in. Additional rooms can be added. A separate water-closet adjoins the bathroom which is 9 ft. by 4 ft. 6 in. The kitchen is roughly 9 ft. square. Detached, but accessible from a covered porch from the backdoor of the kitchen, is a recess for bins and a fuel house, and at the rear of this is an outhouse for cycle and perambulator, gardening tools, etc. This shed measures 6 ft. by 5 ft. 9 in.

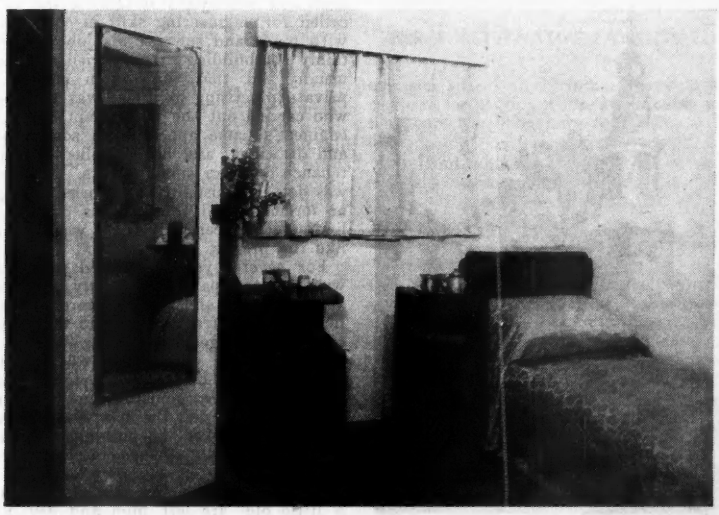
The minimum ceiling height of the house is 8 ft., but by the adoption of the beam ceiling in the centre additional height is gained. The lobby is equipped with a recess for coats, a cupboard for hats and a box cupboard. The kitchen has ample storage space and a refrigerator.

In constructing the Weybridge house the designers aimed at speed of manufacture and erection, as well as comfort and utility. The present factory capacity is up to 100 houses per week, but this figure covers the Weybridge plant alone. As timber becomes increasingly available, a production of 1,000 houses per week or more can be anticipated. The estimated cost of the house is £600. The only work on the site is confined to the preparation of the light but firm concrete and wood foundation. Mr. Richard Sheppard, F.R.I.B.A., was the architectural consultant for the house.

We are informed that the house, which is made by Jicwood, Ltd., of Weybridge, has been examined by the engineering staff of the Ministry of Works, who have expressed themselves as satisfied with it.



VIEW OF LIVING-ROOM.



A BEDROOM.

THE WEYBRIDGE TIMBER BUNGALOW

CORRESPONDENCE

[Whilst we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express their views as briefly as possible.]

"Vacancies for Architects."

To the Editor of *The Builder*.

Sir,—I have very patiently read Mr. Howitt's lengthy letter in your issue of November 10, and am surprised that such a tone should be allowed to enter into a correspondence on a serious technical matter.

Your correspondent seeks to ridicule Registered Architects outside the R.I.B.A. by insinuating that the only reason they are entered upon the Register is because they are in *bona-fide* practice as architects as distinct from being "technically" qualified! A little elementary philosophical reasoning will shatter that misrepresentation.

The Oxford Dictionary gives the definition of *bona-fide* as "without fraud or deception." Therefore, any person not technically qualified would be guilty of fraud and deception if he or she were to practise architecture; and, conversely, if a person is technically qualified he or she is entitled to practise as a *bona-fide* architect.

It would take far too much of your valuable space to deal with the remainder of your correspondent's elaborated inconsistencies, but I would comment that the idea that preference is given to those qualified by examination as a reward for their diligence in studying, tempts me to inquire whether local government authorities exist to perform a job of work or to administer benevolence.

Lancastrian.

This correspondence is now closed.—Ed.

"Some Defects in Small House Design."

To the Editor of *The Builder*.

Sir,—The 14 points set out by Mr. D. A. Beveridge in a recent issue are so vitally important and attainable that no designer should be excused for ignoring them.

No. 10 ("all bedrooms to have windows on two sides, if possible, for cross-ventilation") should apply also to the living rooms, especially to obtain a few hours more sunshine in the room.

There are, however, two further points for securing more cleanliness and efficiency in the cooking kitchen—*i.e.*: (a) All cooking stoves should be so placed that the fumes therefrom shall be conducted either into the open air or, if available, into the vacant roof space above. (b) The light from window or lighting point shall fall within the oven when the door is opened.

Robert G. Seward.

Bournemouth.

The "Arcon" Temporary House.

To the Editor of *The Builder*.

Sir,—The elevations of the "Arcon" Mark IV temporary house illustrated in *The Builder* for November 3 are, I consider, unnecessarily ugly. The "chicken-house" appearance inherent in the design has been accentuated by the top-hung windows, whilst the ridge, barges and eaves seem to have been given no particular consideration from the point of view of appearance. The hoods to front and kitchen entrances do not offer much relief to the picture, yet it is difficult to believe that these were intended to provide protection from the weather.

A point which should be considered in connection with the windows, apart from general appearance, is the excessive cost of replacing such large panes.

The plan, which is good, should be

amended to provide lobbies to front and kitchen doors. (This might be done by moving these doors into the house about 3 ft. or by building non-prefabricated porches after the house has been erected.) The external door to the living-room is not, I think, necessary.

E. G. LING.

Seascale, Cumberland.

Daylight in Dwelllings and Schools.

TO THE EDITOR OF *The Builder*.

SIR,—In your correspondent's article on the above subject which appeared in *The Builder* of November 3, reference was made to "other methods of analysis" of daylight than the Waldram and Dufton methods, but no particulars of them were given.

I should like to call attention to one in particular, because it is so easy to understand and use. I refer to the latest Swarbrick method, which enables daylight factors to be determined, without the use of a planimeter, an instrument which every architect does not possess. This method was illustrated in *The Builder* as long ago as May 28, 1937.

Explanatory plates also appeared in Mr. Swarbrick's book—"Easements of Light: Synopsis," published by B. T. Batsford. In this case, the daylight factor on the horizontal plane at any point is ascertained by using two charts, a perspective chart and a daylight factor grille or counting diagram.

Any architect who can plot perspectives by means of angles can easily record all the necessary detail on the perspective grille. If the horizontal lines do not vanish to the correct points on the horizon, the draughtsman knows at once and can make the necessary correction. Incidentally, this is a useful and easy way of drawing perspectives that is not so widely known as it ought to be. To determine the daylight factor, it is only necessary to superimpose the daylight grille and count the units of light in the sky area. Nothing could be simpler and I do not know of any easier or quicker way of measuring daylight. No instruments are needed and no troublesome calculations have to be made.

I should add that the daylight factor grille published on May 28, 1937, was the one used for measuring light through unglazed openings. On August 13, 1937, you published the daylight factor grille for use when the openings are glazed. The operation is so simple that it is almost impossible for anyone using it to make a mistake. In view of all that your correspondent has written regarding the disadvantages of the tables published in the interim draft for the British Standard Code of Practice, it is difficult to understand why any architect should use them, when the Swarbrick method of obtaining accurate daylight factors for all kinds of complicated conditions can be used so easily. It would be interesting to know how many calculations would have to be made, with the aid of these tables, before cases of complicated obstruction with irregular city skylines could be dealt with.

LAWRENCE I. RICHARDSON.

Leeds.

Builders' Organisations.

TO THE EDITOR OF *The Builder*.

SIR,—I have read the letter of Mr. S. Yudkin in your issue of November 17, together with his previous letter and that of Mr. G. H. A. Hughes. While I had hoped to refrain from entering into this correspondence, it is imperative that I should clarify the position.

Mr. Hughes is fully aware that the L.M.B.A. never has represented the medium and smaller builder. If they had, this Federation would never have come into existence. Two hundred and fifty members out of a possible 8,000 is not representation, but a "closed shop," particularly in view of the Association having been in existence about 70 years.

I am surprised at Mr. Yudkin not knowing the facts, particularly as he is a member of the F.M.B. There can be no question of amalgamation between the F.M.B. and the L.M.B.A. The latter is a parochial organisation; we a national. Our constitution and method of election are entirely different. The L.M.B.A. is an Association in which the ultimate power is vested in those who pay the largest subscription. Anybody joining the F.M.B. becomes a direct member of the national body, and large or small pays a flat rate of subscription, with one vote per member.

The London Regional Council of this Federation consists of a delegate from each of the 37 areas elected by each area in general meeting. Its National Council consists of a maximum of three delegates appointed from each Region. This, Mr. Yudkin must agree, is a democratic system of election and has been introduced in our national constitution at the specific request of the members generally.

It is a pity that anybody should rush to Press with misleading statements or not take the trouble to ascertain the constitution of organisations to which they already belong.

For general information, this Federation has a membership in excess of 2,700 throughout the London Region, and in the provinces there have already been formed 17 active branches, with a membership approaching 2,000.

This is, I submit, evidence that until the formation of the F.M.B. the largest section of the building industry had never been organised or represented; further, of its determination to have its welfare promoted and interest protected by this Federation, whose officers and Council are men of its members' business standing.

L. B. VENNING,
Secretary, Federation of Master Builders.

London, N.1.

TO THE EDITOR OF *The Builder*.

SIR,—I am glad to read in your columns that Mr. Yudkin has accepted my invitation to visit one of our Area meetings, and I have written him direct to arrange a date.

May I suggest that we now leave the discussion until Mr. Yudkin has seen what we have to show him?

G. H. A. HUGHES,
Director, L.M.B.A.

47, Bedford-square, W.C.1.

London Repairs.

TO THE EDITOR OF *The Builder*.

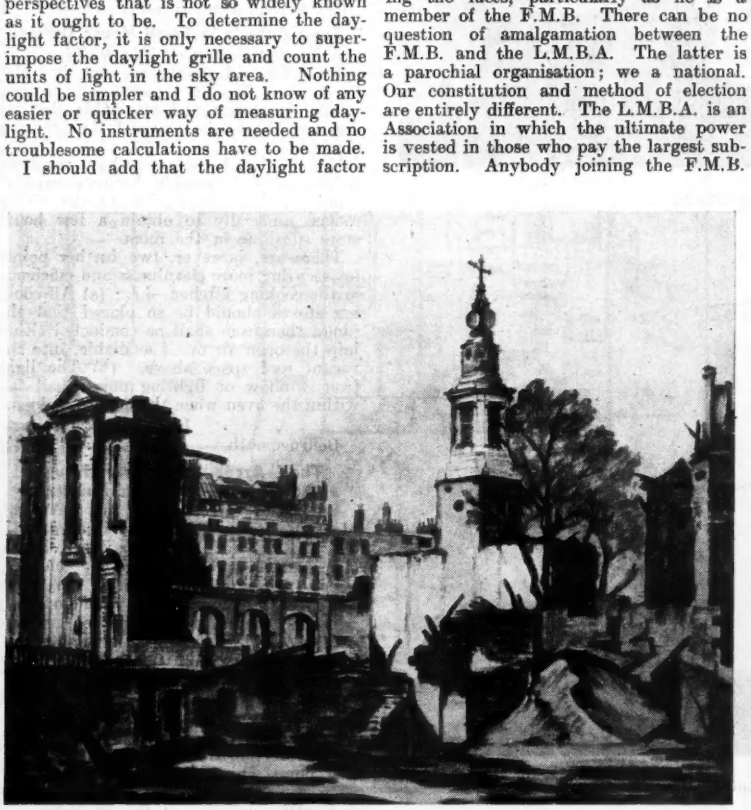
SIR,—I agree entirely with Mr. Winter's commentary on the above subject in your issue of November 10. The borough engineer and surveyor's duties in the past called for engineering skill in connection with roads and sewers; his job was certainly not building; the salaried architect usually did that, and often enough a private practising architect was the man who carried out the job, except that the engineer's name appeared on some plans and drawings, and he controlled a maintenance body for small repairs. That job was delegated usually to a works manager or foreman, and then it was only of a limited scale; certainly there was nothing like the present crisis.

For several years I looked after the war damage repairs of a thickly populated area of a mile and a half square, controlling many contractors with 15 to 20 men each and a large direct-labour force.

After several years I was told my services would not be required, as the borough engineer was reorganising, and I found out afterwards that the man who took my job knew little of the building industry. Chaos apparently ensued, and can you wonder?

Knowledgeable clerks of works, perhaps a little old, are left high and dry, and quite a number of the local authorities do not know a *bona fide* clerk of works when they see one.

CLERK OF WORKS OF 25 YEARS' STANDING.



ST. ANNES', SOHO. From a water-colour drawing by Mr. P. J. Westwood, F.R.I.B.A., at the A.A. Members' Exhibition at 34, Bedford-square.

TEMPORARY HOUSING

GUIDANCE FOR LOCAL AUTHORITIES.

GUIDANCE to local authorities in England and Wales as to the lines on which proposals to provide temporary housing should be framed is given in a Memorandum issued by the Ministry of Health and the Ministry of Works. (H.M. Stationery Office, price 6d. net.) The Memorandum says :

" It is essential that temporary accommodation should not be considered in isolation, but in relation to the whole housing programme of the authority. The use of temporary accommodation will, the Government believe, make it possible approximately to double the number of dwellings which could otherwise be provided with the limited amount of skilled labour available in the first year after building can be resumed. The types of temporary factory-made house approved by the Government have been specially selected on account of the small proportion of ordinary building labour required for their erection. The temporary scheme must not be allowed to stand in the way of the permanent scheme, and it will be for each authority to whom temporary houses are allotted to ensure that both sections of their programme can proceed side by side without stultifying one another."

Temporary houses will be provided and owned by the Government. They will be erected on sites acquired and developed by the local authority, and " to the utmost possible extent the scheme will be treated as part of the housing operations of local authorities." The authority will choose the tenants, fix and receive the rents, manage the property and keep it in repair. In general, the relationship between the Government and the local authority will be one of partnership as in the case of an ordinary housing scheme, except that the Government will, in this instance, bear a much higher proportion of the loss. As soon as the temporary houses are erected, they will be assimilated with the other houses owned by the local authority in order that they may be managed and administered on the same general lines.

Types of Temporary Houses.

Four types of temporary accommodation have so far been approved by the Government : The pressed steel bungalow ; the Arcon Mark V bungalow ; the Uni-Seco bungalow ; the Tarran bungalow.

All these types are generally similar, except that the Arcon Mark V has a central hall. All are bungalows, and all will contain the kitchen and cupboard units incorporated in the pressed steel house. The Uni-Seco is designed for either a narrow or a wide frontage.

The bungalows will be erected by the Ministry of Works, who will also be responsible for the foundations, laying of drains, etc. It will be for the local authority to provide the site, construct the roads and sewers, and ensure that the other main services—water, gas and electricity—are available by the time the houses are due for erection.

Selection of Sites.

The Memorandum draws attention to the importance of rapid selection and acquisition of sites. The bungalows may be built on either :

(1) Sites or parts of sites which will ultimately be used for the erection of permanent houses.

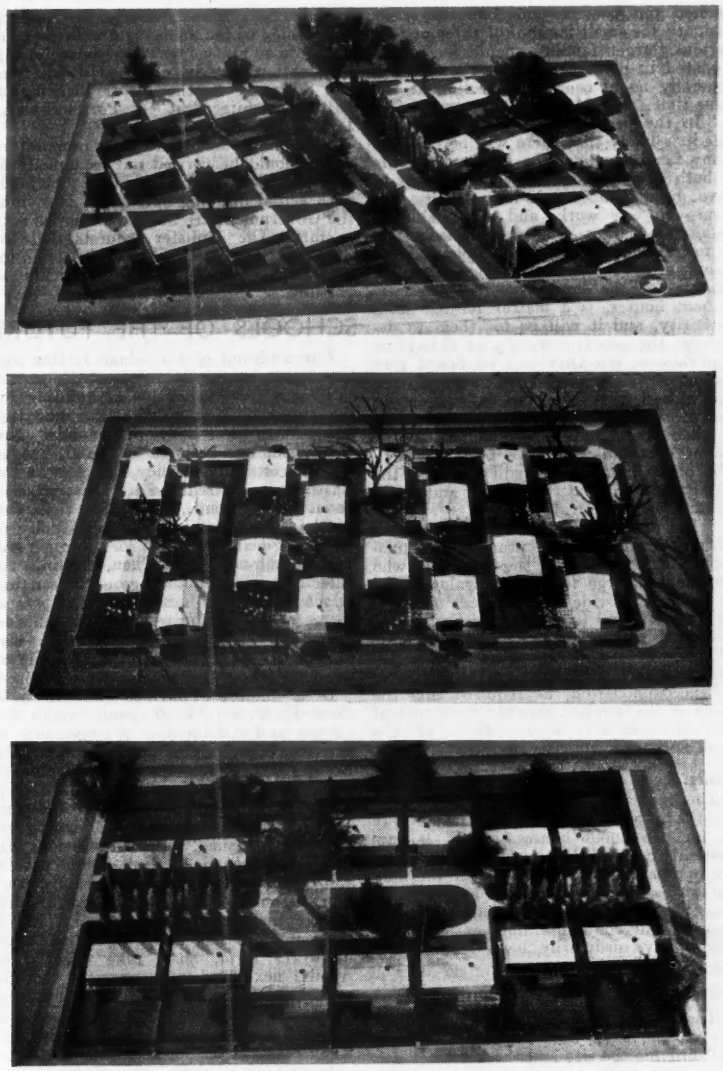
(2) Parts of housing sites on which it is not intended to build permanent structures—e.g., the temporary use of part of an open space which is not likely to be required for playing fields, etc., during the ten years the bungalows are likely to be up.

(3) Land which will ultimately be used for some purpose other than housing, including sites in devastated areas.

(4) Undeveloped land, including wartime sites relinquished by the Services.

Sites will be selected by the local authority in consultation with the planning authorities. Care must be taken, the Memorandum points out, to ensure that the redevelopment of devastated areas is not obstructed, and that land is not used for bungalows which will be needed for permanent houses in the early stages of the building programme. Sites should, wherever possible, be sufficient for not less than 100 or, in the case of authorities with smaller programmes, for not less than 50 bungalows ; though smaller sites, particularly when in close proximity to one another, may in special cases be included.

Local authorities should aim at having in their possession not later than the end of this year enough land for at least a first instalment of the bungalows.



THREE ALTERNATIVE LAYOUTS FOR TEMPORARY HOUSING. (From Models.)

Layout of Sites.

The importance of a good layout is stressed. The surroundings of the bungalows must be made as pleasant as possible, and their colour scheme will require care and skill. Colours may be selected by the local authority from a limited range offered by the Ministry of Works.

" It will be more than ever important to preserve and incorporate in the layout every existing landscape feature which at present adds attractiveness to the site, and wherever necessary additional planting should be arranged, especially if it can be permanent."

The bungalows must be so arranged that the living-room has a sunny aspect.

The Memorandum contains a number of diagrams which have been prepared with the help of the Ministry of Town and Country Planning, illustrating various methods of layout ; but it is pointed out that the application of these methods must be controlled by the natural characteristics of the site. [Three models are shown above.]

Selection of Tenants.

Special guidance is given to local authorities on the selection of tenants. It is

pointed out that as the bungalows are designed for small families of three or four persons, larger families should be accommodated in permanent houses, which will generally be in course of erection at the same time. The Memorandum says :

"In the period immediately after the war it is likely that there will be only too many families where the husband or wife or both have been serving in the Forces or have been transferred from their own homes on war work, and are unable to obtain a separate home for themselves in or near the district where employment is found after the war. The selection of tenants for the bungalows, as for permanent houses, is a matter for the local authority, and it will be for them to determine the relative priority of individual applications, but they will no doubt give special consideration to the claims of men and women who have been on war service and are unable to obtain a separate home of their own, and in particular to the claims of those who have been disabled. The outstanding factor will be that the family are without a home, and such families may be of all types.

"The permanent houses built by the authority will serve to provide accommodation for the needs of those families who become too large for the bungalows, and in order to provide for the needs of growing families, and to ensure that the bungalows do not become overcrowded, the Minister of Health considers it essential that transfers from temporary to permanent accommodation, as required by the needs of the families, should form a part of the administrative arrangements of the local authority."

Rents.

The rents to be charged will be fixed by the local authority in the same way as for permanent houses, and it is suggested that it will be appropriate to charge approximately the same rents for the bungalows as for the permanent houses. The bungalows, though smaller than permanent houses, will contain a number of items which have ordinarily been tenant's fixtures.

Finance.

The financial arrangements under the Act are on the basis that the local authority will provide the site and the necessary services, and the Government will provide the bungalow and its foundations. The local authority will receive the rents, and in the normal case will make an annual payment to the Government of £23 10s. for each bungalow. Where it is necessary to put the bungalows on exceptionally expensive sites, however, this payment will be reduced, or, in the extreme case, a payment will be made to the authority by the Government so as to ensure that no undue burden is thrown on the local rates.

Employment of Architects.

In a circular to local authorities (165/44) the Ministry of Health refers to paragraph 10 of the Housing Manual, 1944, and to paragraph 17 of the Memorandum on Temporary Bungalows, in which attention was directed to the need for skilled advice in connection with the erection of permanent and temporary houses.

In order to assist local authorities (the circular proceeds) the Royal Institute of British Architects is prepared on request to put authorities in touch with architects ready to undertake the preparation of layouts for sites required either for the provision of temporary bungalows or of permanent houses and of house plans required for permanent houses. Requests for the names of suitable architects should be addressed to the Honorary Secretaries of the Local Allied Societies in England and Wales whose names and addresses are shown in an appendix. Alternatively, this information may be obtained direct from the Secretary to the Royal Institute of British Architects at 66, Portland-place, London, W.1.

It is important that this preparatory work should be carried out as quickly as possible in order that a start may be made with actual building operations as soon as the Government are able to authorise such a start. The Minister requests that the authority will take the necessary action for carrying out this work as quickly as possible.

SCHOOLS OF THE FUTURE

THE revisions of the school system contemplated by the Ministry of Education call for a great expansion of building for the purpose of providing accommodation adequate to meet the new demands. Not only is the age limit to be raised, but, in the interests of efficiency, the size of the classes is to be reduced by an average of about 25 per cent., and more than this in the case of children either wholly or partially deaf or blind, or in other respects sub-normal. Then, again, the elder pupils up to the age of fifteen (or, in the near future, sixteen) require greater space for developing technical branches of education. Increased provision is also indicated for physical training, while in some cases boarding-schools are visualised.

It is therefore obvious that to meet these demands we shall require many new schools and considerable enlargements of existing ones, where this is practicable. Besides the structural developments, which will be more clearly indicated in our summary of the schedules of accommodation set out in the M.o.E. draft regulations now issued,* these regulations also specify improved lighting, both natural and artificial, better water and other services, and adequate drainage with sewage disposal where necessary. It is contemplated that these regulations, now in draft form, shall take effect from April 1 next, and it is suggested that the period when compliance with the standards will be secured in a school is to be included in the local authorities development plan.

Schools are classified as follow :—

(1) County and voluntary schools (age five to sixteen);

(2) Nursery schools (age two to seven) and nursery classes in infant schools (three to five);

(3) Special schools (for backward or defective children);

(4) Boarding accommodation.

The first of these covers Primary (infants and juniors) and Secondary schools, and there would, of course, be wide variation in size; the appropriate areas for the site are given as follows : for not more than 50 pupils over seven years of age, half an acre, and for every 25 additional another quarter-acre. Secondary schools require a much greater area, ranging from five to fourteen acres, for reasons which will become clear when the scope of their curriculum is reviewed.

The regulations make a point of the importance in selecting sites for schools, of condemning those abutting on main traffic routes, and of ensuring that children do not have to cross such routes on their way. The value of unrestricted sunlight, the avoidance of undue exposure to prevailing winds, and the advantages of trees and other features on the site are also stressed. Matters such as these naturally come within the orbit of those town-planning the area where the schools are located. Next we find the proportions specified for cloakrooms, changing rooms, washing and sanitary facilities, the accommodation suitable for the teaching staff, the room or rooms for examination and treatment by doctor, dentist or nurse; chamber for drying and airing clothes, and also a kitchen, etc., having due regard to the number expected to take meals in the school.

Nursery schools and classes require arrangements and equipment suited to the very young children attending these. The special schools are likely to have a curriculum including gardening, the keeping of livestock or similar activities, so that this and the greater personal attention the children require suggest a proportionately larger area and other variations in arrangement. Boarding accommodation may be either in conjunction with the school or on a separate site. In the first case an area of half an acre for the first 50 boarders and a quarter-acre for each additional 50 is suggested; in the second, these areas are doubled. Details are given as to planning and organisation of boarding houses for boys and girls.

In the schedules for school accommodation an assembly hall is proposed for all but the smallest, the one-class school, where a spare room is substituted. In most cases the suitable size for the assembly hall is given as 1,800 square feet. The two most important sections of these schedules are the second and third, dealing respectively with Secondary and Special schools. Secondary schools may vary considerably, but include at least an art and craft room, a library, and the assembly hall, available as a gymnasium. The demands of technical and commercial education may add large areas to the scheme, and, of course, a separate gymnasium, with its own changing rooms, is preferable; one or more dining-rooms with cookery services would be included, seating 65 per cent. of the number of pupils. It is assumed that some of these schools will provide education for pupils up to the age of eighteen years, in which case a considerable enlargement of what are termed the "practical rooms," devoted to various forms of technical education, may be envisaged.

Especial attention has been given by the M.o.E. to the type of school to be provided for children suffering from various disabilities who require modifications in the standard methods of education. Classes have to be smaller and subjects dealt with on lines more particularly adjusted to the defects from which these unfortunate children suffer. Remedial exercises, physical training, music, typing, and outdoor pursuits, are included. Rest-rooms and open-air verandahs may be added, and, of course, suitable arrangements for medical inspection and treatment.

As the result of the national acceptance of the Education Department's programme for the future, it is evident that there must be very great activity in school building, and that the urgency of this can only be met by prompt action. It has been considered that schools should have an equal claim to priority with housing, as, lacking this, the advances desirable in education will be seriously delayed, with the resulting setbacks to the national welfare. It seems reasonable that both should be pressed forward as rapidly as circumstances will permit, and that every device for accelerating suitable construction should be exploited.

* Ministry of Education. Draft Statutory Rules and Orders. November 3, 1944. Stationery Office. 6d.

ORGANISATION AND MANAGEMENT IN THE BUILDING INDUSTRY—II

UNIVERSITY EXTENSION LECTURE BY MR. T. P. BENNETT

THE second of the three University of London Extension Lectures on "The Principles of Organisation and Management in the Building Industry," being given by MR. T. P. BENNETT, C.B.E., F.R.I.B.A., Hon. F.I.O.B., was delivered at the London School of Hygiene, Keppel-street, W.C.1, on Tuesday. The subject-matter of the lecture was "The Contribution of the Main Contractor, Sub-contractor, Agent, Foreman, Clerk of Works and Operative." The initial lecture was reported in full in our last issue; following is the complete text of the second :—

Builder and Contractor.—The builders and contractors are the executive side of the building industry, and, as in many other industries, they embrace firms of very substantial variation in size. They start from firms of the smallest order without operatives and finish with firms of the largest and most comprehensive nature. A record taken some time ago showed that there were in the industry approximately 80,000 active firms; of these 30,000 had no employees, and some 1,000 firms had 100 employees and were carrying a turnover of the order of £60,000 per annum. The

CHART No. 1.

Classification by Size of Employing Firm.	No. of Firms Making Returns (a).		Total Operatives Employed.	
	Nov. 1942. (1)	Oct. 1943. (2)	Nov. 1942. (7)	Oct. 1943. (8)
Firms employing :			'000	'000
1-19 operatives	39,207	36,925	161.2	155,7
20-99 ,, ..	3,454	3,402	134.7	132.4
100-499 ,, ..	646	514	123.7	95.6
500-999 ,, ..	58	51	39.5	36.7
1000-4999 ,, ..	63	36	118.4	67.4
5000 and over ..	6	3	47.7	24.7
Total	43,434	40,931	625.2	512.5

NOTE.—(a) Excluding 30,724 firms in November, 1942, and 23,252 firms in October, 1943, who returned *no operatives*.

firms of the largest size in the country, firms that might be called national contractors, were not in number exceeding 40 or thereabouts. It is obvious that with an industry of this comprehensive character, the nature of the firm varies very considerably. This applies :—

(a) To the type of principal who governs the firm.

(b) To the type of staff which he employs.

(c) The type of management which is suitable for his particular class of business, and the manner in which he supervises and executes his contracts.

It will be readily understood that very different systems of organisation are necessary, and desirable, in dealing with building work. The type of contract and control which is suitable for a small repair job is quite unsuitable for a large and complicated building contract.

The Speculative Builder-Contractor.—Some of the builders and contractors of the country carry out a certain amount of building where they control the whole of the design and execution of the work, and sell the finished building to the building owner. As already stated, this constitutes the side of the building industry which has many features parallel with other manufacturing industries.

The Small Builder.—The first and simplest type of building contract is the everyday maintenance contract where the building owner requires straightforward work to be executed, which he describes in simple terms to the builder. The builder gives an estimate for this work, writing his own technical specification insofar as circumstances demand. The builder then carries out the work without further supervision. Quality is dependent upon the reputation of the firm and the visual satisfaction of the building owner. The building works of the country which are covered by this heading are extremely numerous, and probably in peace-time employed a labour force of the order of 300,000 men. These men are distributed throughout all the towns and villages of Great Britain. There is hardly a village which is without its builder. These builders frequently work themselves or act as their own supervisors. They visit the individual buildings, they consult the clients, they control the accounts, they are the backbone of the maintenance of England's building. The majority of them conduct extremely honest and straightforward businesses with a real feeling for craftsmanship and a considerable personal interest, and in many cases a real pride in the work which they produce. It is, of course, realised that to a very large extent they are not builders in the full sense of the word—*i.e.*, a large part of their operations are decorations and repair. They tend to employ the decorative trades, the less heavy side of the industry, and in the great majority of cases operatives are able and willing to carry out more than one particular craft. These builders usually have small yards in which they store plant sufficient for their own ordinary day to day requirements, and if they need anything beyond this simple plant, they resort to larger firms who are able to lend them, for the period of their contract, any other types of plant which they may need.

Unsuitability of Small Sub-Contracts.—Widespread though the system of sub-contracting has become, the small works operation is one which still needs the traditional operation of the builder's yard and the direct employee. Works which need a variety of craftsmen for short periods absorb far too much managerial staff if they are carried out by different sub-contracting organisations, and this class of work should always, therefore, be carried out by the foreman operating directly with the "yard" and the use of traditional workshops.

The Moderate-Size Contractor.—In many ways closely allied to these local builders are builders who have gone beyond the stage of repairs, but who still carry out a large amount of repair work. In addition to their small works department, such firms have built up in various districts a reputation for good building; the individual size of contract which they normally carry out is probably limited to £50,000, and a great many of their building works will be of the order of 5, 10, 15, 20 thousand pounds in any one building.

In order to run these contracts they have established works, and it is characteristic of such builders that in their yard they have a joiner's shop, a plumber's shop, very often a small smith's shop, and possibly a plasterer's or stonemason's shop. In addition they have a band of operatives who have been continuously employed by the firm for very substantial periods, have considerable feeling of cohesion and loyalty, and who have worked together with a pride in building which has become a tradition of the country. The contracts which these firms carry out are usually within relatively limited radius, and they are known, and very jealous of, their local reputation. Even in London the large building firms, until relatively recently, maintained yards of this character and also, to a very large extent, had local reputation. There are firms, for example, in the City of London who have specialised, if one may call it so, in the building of the large offices of city corporaitons, insurance companies and banks, and to that extent their work has been very largely contained in a limited geographical area. These builders' yards also contained their head offices, and together they form a very obvious and definite headquarters for the whole of the work which the firm undertakes.

Local Building.—Reference to the chart showing regional distribution of workmen shows far less variation over a series of years than might have been expected. It is, therefore, obvious that these men are best employed as far as possible by the same firms and under the same agents and foreman. This should help towards the re-establishment of the building entity operating with some of the cohesion of the industrial manufacturer. The organising capacity of the moderate-sized firms should be able to run such contracts efficiently and as so much stability is to be gained by unified working, every effort should be made to let contracts of this magnitude to firms in a given area.

The Larger National Contractor.—Arising out of the steady development in the size of buildings required for a large number of different purposes, the larger building firms have slowly increased their areas of activity, and have taken contracts far outside their original local radius. It is obvious that when these firms secure a contract which is removed from their headquarters, they are only able to take with them a limited number of their own employees, mainly, of course, for economic reasons, although, in many instances, the men themselves are not anxious to stay away from their homes for substantial periods, and conversely local men have local knowledge which is advantageous. This leads, however, to a substantial amount of relatively casual employment, and a portion of the industry, therefore, becomes migratory, and accepts the fact that it will follow the work or the contractor, or holds itself ready for employment on any building with any contractor.

To some extent the movement of building operatives has been accepted for a very long time, and to the superficial observer the industry appears to lack the cohesion and stability of the aeroplane or motor-car industries with their stable factories and their stabilised body of workmen, but this appearance of instability, or of casualness, is not nearly so pronounced amongst the good craftsmen as might be supposed, and very large numbers of men, although not continuously employed by any one firm, yet regard themselves as particularly attached to that firm, and in peace-time they found out where the firm was working and at their own cost moved themselves to the new contract wherever it might be. The custom of the industry was to engage these men on the contracts, although in practice large numbers were continuously employed by the same firm. Of course, it has been common knowledge that in recent years the industry has suffered severely from booms and slumps, and from a very large measure of unemployment and, therefore, the industry has

in fact become casualised to a substantial extent. This has been a very serious detriment both to the employer and to the workmen, and has interrupted more and more the cohesive nature of individual firms. During the war it has been necessary to direct workmen to different important contracts, and these workmen have been rendered more casual in their loyalty to particular employers than has ever been the case before, and there can be little doubt that the industry has suffered a very serious loss of efficiency as a result of the constant movement of workmen, the steady destruction of personal contacts, and the fact that the men have lost interest in individual employers, and to a large extent in their work and in their contracts. It is equally obvious that this is a very serious loss to the country as a whole, and one of the first things to be done when we return to normal post-war conditions will be to make an effort to restore the working of groups of men under employers of their own selection, and to make it possible that the men should resort once more to working in a given district on a given series of works under the same foreman and the same master builder.

In the case of large contracts the advantages of local control of moderate-sized contracts are outweighed by the superior resources, contacts and personnel of the large contractor, and large contracts are undoubtedly run most efficiently by the national contractor.

The Job and the Yard.—It will be seen that this work away from a base divides the work of the building contractor between his headquarters and the site of the contract and, therefore, the engagement of men at the yard is, to some extent, a measure of the permanent nature of their employment and on the job their casual adherence to a particular contract. At a later stage we will consider in detail the sub-division of operations which the builder will decide upon in running each individual contract.

The Civil Engineering Contractor.—At this point the consideration of the civil engineering contractor needs a place. The civil engineering contractor, as his name implies, carries out contracts for the erection of docks, bridges, the construction of railways and canals, and works of a similar character. This means that he has almost always been working away from a headquarters and there has been no pressure upon him to create a yard for the training of craftsmen, or for the execution of pre-contract work; he has universally, or almost universally, engaged his men actually on the contract. The civil engineering industry, therefore, has been more migratory than the building industry, but has, at the same time, been subject to the same laws—*i.e.*, the adherence of individual operatives to individual firms, a very considerable amount of migration of these men to the jobs which the firms were carrying out, but it has been subject to one or two very substantial differences :—

(*a*) The first is the lack of emphasis on craftsmanship, following which there has been much less need for the individual craftsman to remain attached to the individual firm in order that he might carry out a similar class of work.

(*b*) There has been a very great difference in the length of the contracts so that a man, particularly the navvy, having once carried himself to the contract might expect to find employment for one, two, three or even more years. He was not constantly moving as he would be on the short-term building contract, and this made his life at least tolerable, although he might have his home established at a base and might only be able to visit it at periods.

(*c*) It also meant that many of these men were housed for some part of their contract in temporary buildings. The war, with the establishment of many works in remote parts of the country, not adjacent to or in towns, has emphasised this particular type of organisation and has been one of the reasons for much more migratory action on the part of workmen.

Another important factor which has influenced the craft side of these contracts, is the fact that the standard of work in engineering can normally be set with the first portion of the work executed; thus the standard needed for laying a railway is perfectly obvious and must be maintained at an even level. The standard of brickwork in a large retaining wall can similarly be established and maintained, and the civil engineering industry in general has a very much more scientific standard than has the parallel work in the building industry. This has affected the outlook not only of the workmen but of the employer; has influenced the general system of organisation; and incidentally, has affected the system of bonusing, which will be referred to later.

Effect of Job Contracting on Training.—The methods of the civil engineering contractor and the increasing tendency to eliminate the builder's local shops is bound to affect very seriously the facilities available for training apprentices and young craftsmen. However efficiently the contract may be run from other points of view, the decline of the use of these builder's shops is a national disadvantage. In building, craftsmanship is still a matter of supreme importance. Apprenticeship has declined in volume for many years and school training has not yet efficiently taken its place. Every great employer of labour who does not train his quota of craftsmen is avoiding one of the responsibilities of an industrial leader and will eventually suffer with the rest of the community for this loss. It is remarkable that in building, with such an ancient tradition of apprenticeship, modern practice should have allowed this decline, while in other and newer industries with no tradition very important and indeed costly arrangements are being made to ensure a continuous supply of fully trained boys and men.

Good organisation demands that apprenticeship and training should become an established responsibility of every employer, and that he should, if necessary, be compelled to have in his shops or works a given percentage of properly indentured apprentices undergoing a proper course of training.

SUB-CONTRACTS.

In dealing with the professional side of the industry, attention has been drawn to the increasing sub-division of building contracts and to the steady growth of the specialist, whether he be consulting engineer or sub-contractor.

Dealing at this stage with the sub-contracting side, it will be seen that in the cathedral-building period and in the majority of other buildings up to, shall we say, 100 years ago, the efficient builder and contractor had in his own yard the means and the men to build practically the whole of the work, and he therefore had the whole contract under his personal control in a way which in larger contracts to-day has become impossible. The existence of the sub-contractor and the growth in the number of sub-contractors has tended to increase very substantially the difficulties of organisation and has brought into existence the need for a different type of supervisor and a different type of controller—*i.e.*, it has laid greater stress upon organisation in the leading man on the site, and less stress upon craftsmanship. This has changed the key man in the industry—*i.e.*, the leading man on the site into "the Agent," generally a man of higher type of education, more comprehensive and greater theoretical knowledge, than the general foreman, but, above all, an ability to organise. To some extent this has affected the employer, who, to run his larger contracts, must also be a man who can develop an organisation of magnitude and run it efficiently, and need not necessarily have a very high standard of technical knowledge. It is a tendency which the whole industry deplores, because it is still the opinion of leading builders that to be a good builder a man must be a good technician, and what the industry must aim at therefore is the grafting of good organisational power upon good technical knowledge, and not, as sometimes tends to be the case, the grafting of a small amount of technical knowledge on to a large amount of financial ability and organising capacity. This increasing emphasis on organisation and co-ordination is one of the reasons for the wide consideration that is being given to various types of cost reimbursement contracts, of which more will be said later.

Comparison with Other Industries.—It must not be supposed that building is the only industry which has been subjected to this change from craftsmanship to management. Very large numbers of other industries have been affected in the same way—*e.g.*, clocks were formerly made by a very skilled craftsman—the clockmaker—and in the finest cases wonderful examples of craftsmanship in clocks have been objects of admiration for many hundreds of years. The clockmaker has slowly been subjected to the same type of pressure as has the building craftsman, and the clockmaker's workshop has changed to the clock factory, in which power to organise the production of a large number of clocks overrides the individual craftsman's power to produce an individual clock. Therefore, what we are witnessing in building is only what we are witnessing in the great majority of industries of modern civilisation. While pride of craft remains, and must always remain, it tends to be modified to the acceptance of a "reasonable standard" or an "efficient standard," or a standard sufficient for the purpose for which the building is intended, and this quality of work now is applied to the great majority of buildings.

SUB-CONTRACTORS.

Much has been said of the growth of sub-contracting in the building industry. An examination of sub-contractors shows that they are divided into the following groups :—

(*a*) Craft contractors; (*b*) structural contractors; (*c*) contractors responsible for various types of equipment; and (*d*) specialists in a large number of subsidiary pieces of buildings, or particularly high-grade fittings, or the application of special materials.

Craft Sub-contractors.—The growth of craft sub-contractors has arisen in two ways :—

(*a*) The building firm, having joinery works, has gradually put through its shop an increasing amount of joinery, and in order to secure the lowest possible cost of production has assimilated the technique of mass production in other industries. This has meant the collection and maintenance of a group of capable machinists, responsible and well paid foreman and

manager, and works of appreciable magnitude. To cover the overhead costs of this production organisation it has been necessary to maintain a substantial flow of work through the shop. The building contractor with a large joinery works to maintain this flow has taken contracts from other builders for the production of their joinery, and gradually has found that his joinery shop has grown to a joinery business; it then becomes unsound for other contractors to allow their clients to know that their joinery is being carried out by a competitive firm of building contractors, and to rectify this commercial position the building contractor with a large joinery works, taking contracts from other builders, splits off the joinery from his main contracting business, gives it a separate name, calls it a joinery company, and then proceeds to carry out work for himself or others as an independent business. Conversely, the building contractor who has not developed his joinery works on these lines tends to give his joinery contract to the builder who has; gradually finds that it does not pay him to keep more than a few joiners in the shop for the specialist work which he may acquire, and probably ultimately abandons his joinery shop altogether. He may at the best retain a small body of joiners mainly to do either official work of a high grade, or repair work where joiners are needed at short notice for short periods; thus the building contractor develops the joinery firm and becomes a joinery sub-contractor.

Other joinery works have grown from the opposite side of industry—*i.e.*, firms have created joinery work with the sole purpose of carrying out joinery contracts. These works have arisen, on the one hand, from the saw-milling—*i.e.*, the rougher kind of woodworking—and on the other hand shopfittings—*i.e.*, the finer kind of woodworking. In any case, the result is the production of a joinery sub-contractor.

(*b*) Masonry has developed sub-contractors from an opposite angle; the transport of rough-hewn blocks of stone is obviously more costly than the transport of worked stone, and therefore the Bath and Portland stone quarries and other stone works have tended to set up shops in which they do the whole working of the stone before it is despatched to the site, and they thus become masonry sub-contractors. The main building contractor supplies them with the drawings he receives from the architect; the masonry sub-contractor works the stone at the quarry and despatches it to the job fully worked. Somewhat parallel conditions have given rise to plumbing sub-contractors, smith's and plastering sub-contractors; thus the Craft Sub-contractor has come into being.

Structural Sub-contractors.—The next main group of men who operate independently in the building industry are concerned in the following :—

(*a*) Constructional steel; (*b*) reinforced concrete; and (*c*) patent floors.

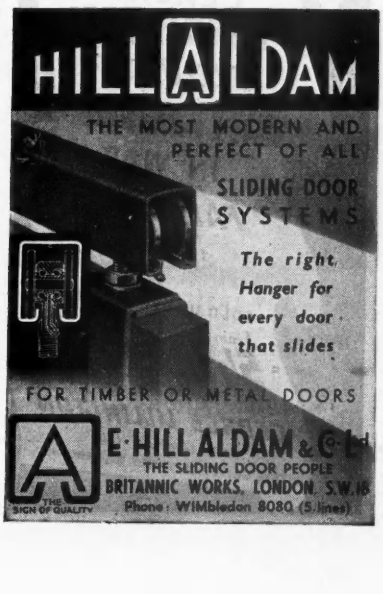
So far there have been few instances of firms attempting to produce prefabricated walling other than concrete blocks. The constructional firm has come into existence as the result of the development of steel. The handling of structural steel has needed the erection and equipment of large works with expensive machinery; therefore, a relatively small number of people are able financially to develop work of this kind. Having created their shops they have to secure as wide a circle of clients as possible for the construction of the steelwork. To facilitate the flow of work they offer to design and calculate the steel for the architect or help the structural engineer, or they take sub-contracts from building contractors. The net result is that they have a continuous amount of employment passing through their shops and are able to justify their heavy overheads.

Reinforced Concrete Firms. — These have arisen from a somewhat similar set of circumstances, with this distinction : the handling of the complicated bar-bending systems of reinforced concrete buildings has needed special bar-benders, and particularly good supervision by men with a knowledge of bar placing. Side by side with this necessity for knowledge goes the possession of systems of centring of a semi-permanent or permanent character. The design of this centring is a specialist's job and manufacturing involves a considerable capital expenditure; thus the reinforced concrete specialist comes into being as a result of two quite distinct operations—one the possession of men with the skill and knowledge to control intelligently, and the other the possession of types of prefabricated centring which represent high capital costs and need a big volume of work to justify overheads.

Electrical Sub-contractors.—The next group of sub-contractors who have developed in this country are those dealing with equipment. The first large group of firms deals with electrical equipment. These firms have grown with the development of electricity. They have acquired the technical skill necessary to control electrical installation, but on the whole they probably have needed the expenditure of less capital than the other large sub-contracting sections of building. They rely principally for the development of their businesses upon their comprehensive technical knowledge and experience.

Heating and Ventilating Engineers.—These firms have developed with the application of the science of heating and ventilating to buildings. In a great many cases they have acquired interest in portions of the equipment which they use—*i.e.*, the boilers, the fans, motors, and so forth—and in a number of cases have established works where they manufacture certain portions of the heating equipment they use. One of the main reasons for employing these firms is unquestionably their very wide experience of the application of their particular portion of building equipment.

Lifts.—The lift contracting firms are in a separate category. Each of them have developed a set of patents with their own engineers, in many cases in their own works, and they probably are the only people with a really comprehensive grasp of the details of the machines which they instal. Lift engineering has become a highly specialised section of building equipment, using knowledge largely confined to the lift engineers who are attached to the commercial firms.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SPECIALIST SUB-CONTRACTORS.

Under this heading I include a large number of items of equipment or decoration which have been the result of special commercial arrangement with the contractors. In this list there are :—

(*a*) Acoustics and the materials needed to produce good results; (*b*) cork or rubber or other special materials; (*c*) marble and terrazzo asphalt; and (*d*) fibrous plaster.

In addition to the above there are the specialist firms who appear from time to time with patented articles for which they claim some special quality or asset, and these people endeavour to show that their own specialities have a particular advantage if included in the design or equipment of a building. They usually have specialist craftsmen who deal with the fixing, they often have a source of supply reserved to themselves alone, and, trading on these two advantages, they are able to secure a contract which cannot well be let to any other firm.

Cartels.—At first sight the Cartel (by which I mean the more or less watertight trading association with a fixed price for its joint commodity) appears to be as undemocratic and as unsocial as the "corners" in wheat, steel, oil, and other commodities by which leading industrialists made themselves infamous at the end of the last century and the beginning of this. Properly controlled, however, they may well be instruments of efficiency and advancement. They can be used as a means of interchange of research and experience, as a means of efficiently and evenly employing established plant and of maintaining an even flow of work through the shops controlled by the constituent members, and thus ironing out the local booms and slumps which have such a disastrous effect upon both workpeople and employers. If coupled with this service, the Cartel insists upon a high level of efficiency, a moderate margin of profit, and is prepared to see individual firms fail and close if they fail to run economically. They may be a sound part of good building when the ring is complete. However, the temptation to slackness of management and large, easy profits is obvious, and Cartels must, therefore, eventually be subject in the public interest to examination and control.

Design and the Sub-contractor.—I have enlarged upon the underlying reasons for the development of sub-contractors and sub-contracting to show that the industry cannot hope to return to individual craft control. One important aspect of sub-contracting has developed side by side with the development of the sub-contractor—*i.e.*, the claim of the sub-contractor to be able to design the work which he also wishes to instal. From the point of view of the building owner, it is obvious that if this takes place on a large scale :—

(*a*) It limits the amount of competition which is possible; (*b*) in very many cases will enable the contractor to secure his contract without competition.

The building contractor, after competing in a severe market for his contracts, looks jealously upon this special attraction of the sub-contractor. Owing to the limited field of men with specialised know-

ledge of many of the articles which the sub-contractor manufactures, it has been essential in the past to employ the sub-contractor who designed the work. As science in each case develops, consulting engineers have appeared capable of designing the sub-contractor's work, and to writing the necessary specification.

There must come a time, therefore, at which it is possible to secure competitive tenders for specialist work on the same lines as those for the main contract :—

(*a*) It would be unsound to ignore the assets of the good sub-contractor.

(*b*) He has developed special machinery and plant.

(*c*) He has employed and continues to employ specialist workmen.

(*d*) He has in certain cases developed mass production methods which cheapen the product with which he deals provided that the design has been modified to suit his particular processes.

Bearing in mind the above factors, it is obvious that the sub-contractor as constituted in this country can make a very substantial contribution to make both to the experience and knowledge required in designing the construction and equipment of buildings and in the power to carry it out economically. In these circumstances it would be foolish to ignore the contribution which he can give to the final design. On the other hand, it is not possible to give any contractor on the building a higher price than the fair price of the portion of work which he is to do. To obtain the best of all these elements, there is considerable pressure upon the architect's office at the present moment to secure design from professional men for all parts of the building, either in the case of local authorities or Ministries through sectional staff—*i.e.*, the heating, ventilating, electrical or other engineers, or, in the case of the private architect, from a specialist engineer on his own staff, or by means of consulting engineers. By using this machinery the work can be fully designed, quantities can be taken out by the quantity surveyor, and tenders can be obtained from the specialist firm.

Contribution of the Specialist Firm.—If this work is done in such a way that the final details of the construction and equipment can be completed after the tenders are obtained, then in finally detailing the work the experience, knowledge, plant and specialist workmen of the sub-contractor can be used to the best advantage. This combination of the designer and the specialist sub-contractor needs to be worked out in further detail as post-war work proceeds, but it undoubtedly represents the general lines upon which the best aspect of all types of the work will be secured.

AGENT OR GENERAL FOREMAN.

The next factor in the building industry, to which reference has previously been made, is the Agent or General Foreman. He has to take control of the site and direct the various operatives, and to a very large extent the sub-contractors, so that the final result is economical to the builder and satisfactory to the client.

The increasing need for good technical knowledge covering a wide field and the need for considerable organising ability is tending to change the character and education of the key site control in building, and the agent with a high type of education is taking the place of the craft trained general foreman. This movement must go on and building must recruit its site controlling members more and more from the leading technical schools or the Universities. This will by no means displace the general foreman, who will still be needed to direct and supervise the craft operations of the job, but it will be an addition to the site staff of all contracts of any magnitude.

Beneath the general foreman and the agent are trade foremen or gangers with a special knowledge of the sectional work upon which they are engaged, and beneath these again is the mass of operatives who are responsible for the production of the building.

Operatives.—The position of the operative in the organisation needs detailed study :—

(*a*) For many years it has been the custom to engage the operative on the job.

(*b*) To pay him an hourly rate of wage.

(*c*) To subject him to an hourly engagement, and, therefore, to very easy employment and discharge.

(*d*) To stop his payment in wet weather or heavy frost or any period in which he was unable to work.

(*e*) To subject him to relatively rough conditions of living on the site of the works.

Side by side with this very uncertain tenure of employment, the industry accepted the fact that skilled craftsmen needed a five-year apprenticeship before being qualified for the receipt of craftsmen's wages, and it has not hitherto seen any inconsistency in a long period of training and preparation and the none too certain expectation of continuity of work which the industry could offer. The system is a survival of a period at which craftsmen were scarce, and therefore any trained man was certain of a continuous engagement.

CHART No. 2.

NUMBER OF INSURED MALES (AGED 16-54) IN THE BUILDING AND PUBLIC WORKS CONTRACTING INDUSTRIES BY REGIONS, AT JULY, 1939.

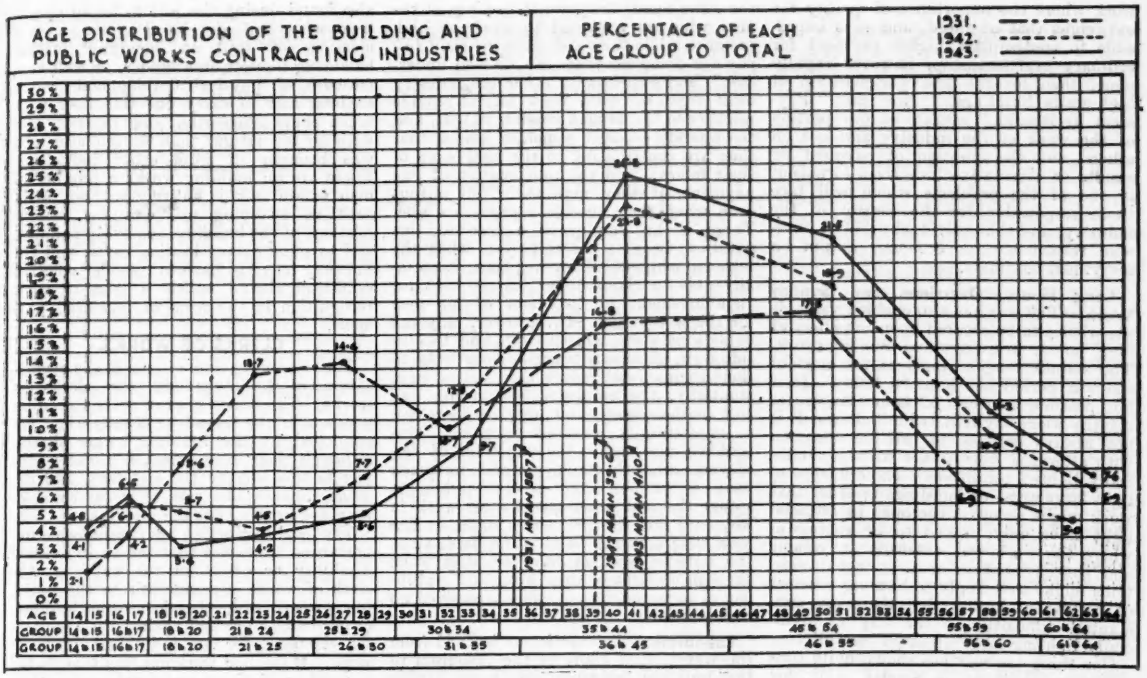
Region.	1939. (1) '000	1939. Per cent. of total. (2)
London and S. Eastern ..	324.1	23.8
Eastern	82.1	6.0
Southern	82.3	6.1
S. Western	100.7	7.4
Midlands	107.8	7.9
N. Midlands	80.0	5.9
N. Eastern	96.8	7.1
N. Western	116.0	12.2
Northern	80.7	5.9
Scotland	153.5	11.3
Wales	87.8	6.4
Total	1361.8	100.0

SOURCE.—Ministry of Labour and National Service.

NOTE.—The table gives the numbers of insured males whose unemployment insurance books were exchanged within the regions shown. Books were, in general, probably exchanged near the place where the employee worked. The figures prior to 1942 have been adjusted to comply with the reconstitution of the regions which took place that year.

It is interesting in this respect to digress for a moment upon the word "journeyman" which at one time was synonymous with "craftsman." The original cradle of craftsmanship was in the great cathedrals of the country, and these cathedrals fostered and, to a very large extent, produced by means of apprenticeship the leading joiners, masons, carpenters, bricklayers, glaziers, and other trades. The boy was frequently apprenticed to men working on a cathedral, and, properly apprenticed, was admitted to the Guild belonging to his trade. At that time book learning was extremely limited, and the majority of men or boys learned their trade by empirical methods and word of mouth. The individual operation of the craftsman, therefore, was not easily understood by a person outside the craft; hence we have the "secrets of the trade"—the particular method of securing a result which the general education and intelligence of the craftsman made him unable to discover merely by examining the final results. Out of these social conditions there grew up throughout the country a number of Guilds, entrance to which was very strictly limited to those people who were apprenticed to the trade. It became the custom for the apprentice as soon as his apprenticeship had expired to travel about the country, and in the Middle Ages to travel to the Continent to work upon cathedrals which were being built so that he might extend his knowledge, and it was almost compulsory on the apprentice to spend a certain number of years learning his trade by practical experience in other places; hence he came to be called a "journeyman." I myself, in talking to the secretary of the Masons' Union about 20 years ago, found he had been apprenticed to Lichfield Cathedral, and had actually seen in working this system of apprentice and journeyman, just as it had operated throughout the Middle Ages.

In the period before the war, with 200,000 or more unemployed in the industry, the industrious and skilled workmen earned for themselves a very large measure of continuity of employment, frequently with the same builder, and in recent years the builder has used increasing efforts to maintain continuity over periods of bad weather by saving up or organising inside work which could be done when outside work was not possible; thus the loss of pay and loss of time which were some years ago very serious to the bricklayer, the mason and the outside worker has been minimised. In spite of all this, the skilled worker suffered in



some cases a very serious loss of income in his weekly pay-packet, but he could gain substantially, or rather he could minimise his loss substantially, if he were a good industrious workman.

Firms which took a real interest in the employee, and they were quite substantial in number, retained a large proportion of their employees from year's-end to year's-end. Loyalty to an employer who treated him well was a very substantial incentive to good and industrious workmanship, and there were, therefore, incentives in existence for producing good work and good output, which have been largely affected by war conditions and are operating less to-day than in any previous period.

POST-WAR CONDITIONS.

It is important to stress these incentives to work because the post-war conditions, as far as anyone can see, will seriously reduce the former incentive to work. The industry is looking forward to a period of at least ten years when there will be :—

(*a*) Unlimited work for every person in the industry; (*b*) there will be a guaranteed week; (*c*) arising from the guaranteed week there will be payments for wet time and payments for periods of frost; and (*d*) the payment for unemployed men will be substantially raised, and therefore the advantage of being employed will be less substantially felt.

All of these factors are removing the incentive which formally operated and induced good work and good output, and unless other incentives take their place in equal or greater force there is a risk that the industry may seriously upset its economics by reason of the fact that its operatives are producing insufficient work.

Payment by Results.—During the war the Essential Work Order has instituted "Payment by Results," and in certain cases this has led to a very large increase in output of many operatives. "Payment by Results" has probably operated more readily during the war than it will do after the war because war conditions stress almost alone the necessity for speed, while post-war conditions must stress equally with speed the need for quality. Another factor which may be of some importance is the factor of 100 per cent. employment. This means, as war-time experience has shown us, the employment of many men over age or with physical disabilities, and with less than the standard amount of skill. All these factors tend to reduce the output of these men. When such men find they cannot earn bonus they sometimes become disgruntled, and their final output is less than that which they would have obtained had they not been jealously looking at the more able-bodied men who succeed in earning substantial bonus.

In housing, which may well constitute one of the major building operations of the next two or three years, it may be possible to arrive at :—

(*a*) A standard of work which is acceptable; (*b*) a reasonable target output, and, therefore, employ "Payment by Results" satisfactorily.

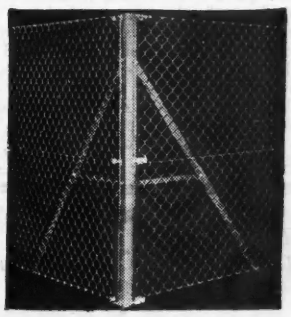
On the other hand, it is difficult to see how "Payment by Results" can be employed on the more elaborate work and

CHART No. 3.

NUMBER OF PERSONS INSURED IN THE BUILDING AND PUBLIC WORKS CONTRACTING INDUSTRIES AS AT JULY EACH YEAR, 1939-1943.

GREAT BRITAIN (16 AND OVER).

		Males (16–64).	Females (16–59)	Total.
1939	Builder ..	*1,007,640*	13,110	1,020,750
	Public Works Contractor	*354,180*	2,000	356,180
	Total ..	*1,361,820*	15,110	1,376,930
1940	Builder ..	*685,250*	12,050	697,300
	Public Works Contractor	*337,260*	2,810	340,070
	Total ..	*1,022,510*	14,860	1,037,370
1941	Builder ..	*598,470*	14,680	613,150
	Public Works Contractor	*320,660*	5,310	325,970
	Total ..	*919,130*	19,990	939,120
1942	Builder ..	*474,340*	16,920	491,260
	Public Works Contractor	*288,490*	9,620	298,110
	Total ..	*762,830*	26,540	789,370
1943	Builder ..	*363,510*	15,080	378,590
	Public Works Contractor	*228,590*	8,770	237,360
	Total ..	*592,100*	23,850	615,950



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work where the importance of quality far outweighs that of speed, and it is impossible to contemplate higher payment for ordinary craftsmanship, however rapidly done, than for the fine workmanship of high-grade buildings. Nor can "Payment by Results" operate on one portion of the work of the industry and not on others, and the question of payment by results or alternative incentives to output is one of the problems which will face those responsible for the control of the industry, and the individual agent or foreman responsible for economic output on individual contracts.

Long Hours, Overtime, and Sunday Work.—The war has also enabled valuable experience to be secured upon the effect of long hours, overtime, and Sunday work. The standard week aimed at for most of the war period has been 60 hours. It is not possible to work 60 hours in winter months when daylight is limited, and it is not always possible to provide the men with alternate work under cover in artificially lighted conditions. Experiments to light large areas of buildings in order that work might go on in the open in artificial light have only proved to be successful where the work was extensive in volume and concentrated in area. Such conditions might well apply to housing schemes of permanent houses, but there are substantial difficulties in the way of artificially lighting large areas successfully.

One thing the war has shown quite conclusively, and that is Sunday work for more than an occasional Sunday, or for a very few men is uneconomic. Men cannot work for more than, at the most, 13 days on end without suffering from serious lassitude, and the long hours of the war period have been responsible, to a large extent, for the so-called non-valid absenteeism. The economics of the industry and the organisation of contracts, therefore, show that, however urgent the work may be, the working week must be limited to something which a normal man can continuously operate without undue fatigue, and this working week rests at a maximum of 50 hours; probably the 44-hour working week of pre-war days is the most that men should be asked to work continuously on any contract. If work is so urgent that the 44-hour week does not fulfil the necessary conditions of work, and if the men are available, it would be preferable to work two gangs rather than to attempt for prolonged periods to work one set of men a large number of hours. Sunday work in any case is not a real means of providing additional speed, except to break bottlenecks.

Wet Time.—Another problem of the post-war period will be the guaranteed week with its payment for wet time. On any given contract the outside worker cannot work when it is raining or when there is severe frost, but the inside worker is quite able to proceed with his work once he is under cover. It is found that where the men are paid for wet time, the outside worker of necessity ceases work, and if no inside work can be found for him, of necessity he sits in the canteen and amuses himself in various ways until the weather permits him to return to work. The joiners, plasterers, painters and other inside workers, seeing the bricklayers, masons and the tilers thus enjoying leisure, find it very difficult to be public-spirited enough to continue with their work at full pressure, and therefore, the whole contract tends to go through a period of one or more hours of slack work, or even cessation of work.

It is quite obvious that this heavy burden on the industry is very serious if it becomes widespread in its operations. On the other hand, the personal feelings of the men who are expected to work at high pressure while their comrades are paid full pay for doing no work can be well understood, and somehow or other the industry must organise inside work for its outside workers to the utmost possible extent, and the operatives must somehow realise that they are contributing to the well-being of their fellows, and the continuation of this payment, if they give their full output even when their outside workers are idle. There is an employers' aspect to this question, because the employer, when the men are whistled off for wet time, is normally able to claim under his contract for reimbursement for payment of his men for the wet period. If, however, only the outside men are whistled off, and the inside men, because of their envious looks to their companions, reduce their output substantially, the employer has to pay the cost of their wages, but receives in return a substantially reduced output. This problem also needs the attention of employers, as both employers and workmen have a common duty to the public to secure the maximum quantity of work in wet time for the payments made. The men have a moral claim to be paid, since the outside workers have to stop work through no fault of their own, and a problem of some magnitude has yet received no real solution.

Labourers.—Another lesson learned from the war is that many of the labourers in the building industry are more highly skilled than the industry was prepared to admit. Skill in this case, in certain instances, means also muscular development; thus the navvy, the real hard shovel worker, or the filler of concrete, the doer of heavy tasks of this kind, is bound to possess quite a substantial measure of skill in his limited operations, and also to need considerable physical development before he can carry them out with speed and facility. He is, therefore, more than a labourer without any qualifications. The bricklayer's labourer, carrying his hod of bricks up a ladder apparently with ease and with little skill or intelligence, was also found during the war to be an operative who had developed quite a fair measure of skill in handling bricks, balancing himself on a ladder, as well as a measure of physical development which enabled him to carry out this task very much more efficiently, and rapidly, and with far less fatigue than the labourer who was brought in from other industries. There are on building works a number of men whose task is entirely without skill, such as sweeping up, cleaning various portions of the building, removing rubbish, and to some extent loading carts, and the industry may yet have to consider whether semi-skill should entitle a man to some recognition in the form of increased payment.

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CLERKS OF WORKS.

The remaining class of men in the organisation of buildings are the clerks of works. These men occupy a very peculiar position in the industry; legally they are employed by the building owner direct, although their engagement is usually subject to selection by the architect, and the great majority of clerks of works consider they are working for the architect.

The legal distinction has considerable importance. It means that for an individual disability or defect in the building, the clerk of works is responsible to the building owner, and, therefore, the building owner cannot proceed against the architect for damages for an individual piece of work. If the bad workmanship is repeated a number of times or is extensive, then the architect may become liable for negligence. The clerk of works is the real controller of quality in craftsmanship and his contribution is still essential to fine building. There is strong reason to believe that the clerk of works should be directly employed by the architect.

A new element in site control in building has been created by the wide use of sub-contractors, to which reference has been made and by the increased speed of building, and this position has been met by the increasing use of the site architect, of which more will be said later.

The Building Machine.—The foregoing picture of the building machine to be organised may be summarised as follows:—

(*a*) Building Employer or Client.
(*b*) Architect.
(*c*) Consulting Engineer.
(*d*) Quantity Surveyor.
(*e*) General Contractor or Master Builder.
(*f*) Sub-contractor.
(*g*) General Foreman or Agent.
(*h*) Trade Foreman.
(*i*) Craftsman.
(*j*) Labourer.
(*k*) Clerk of Works.

This omits a large circle of manufacturers who supply materials or prefabricated parts.

OBITUARY

J. C. Sergeant.

We regret to record the death of Mr. John Charles Sargeant, on October 28, at the age of 75. He was the founder of Messrs. John C. Sergeant, Ltd., builders and contractors, of Bracknell, Berks, a business which was started in the last century, and up to his death was its managing director.

The late Mr. S. E. Cole.

Mr. S. E. Cole, a director of J. H. Sankey & Son, Ltd., and British Sisalkraft, Ltd., died suddenly in hospital on October 31, aged 54. He joined the firm 25 years ago, and did much to build up its connection with reinforced waterproof building paper, hollow blocks, etc.

COMPETITIVE TENDERING

THE SYSTEM AND THE BUILDING CONTRACTOR

[FROM A CORRESPONDENT.]

In the article published in *The Builder* last week on the report of the Central Council for Works and Buildings to the Minister of Works on the subject of "The Placing and Management of Building Contracts," you criticised their opinion that the best method of entering into a contract is by competitive tender, and based that contention on a belief that the competitive system may have had its day. I believe the theory is a sound one, and should like to be allowed to develop the subject further.

It is perhaps a common opinion that competition is a law of nature, and as regards physical characteristics and intelligence and quality in commerce and industry this is correct. Without competition in such matters a society or a people become stagnant and decadent and eventually decay. The law in China that it was impossible and impious to attempt to improve on the achievement of their ancestors reduced a great civilisation and a far-flung empire to impotence.

But this law emphatically does not apply to financial competition. In fact, the law is exactly the opposite. Financial competition contains in itself, and must always contain, the seeds of its own dissolution. This form of competition is quite modern and has actually only arisen to any considerable extent since the start of the industrial revolution. The fact that it is self-destructive is easily proved.

Capital invariably tends to flow into any industry which shows a profit, and the more the profit the greater the flow of capital. If the industry is centred in one concern, the only danger to guard against is over-capitalisation. This, however, is very rarely the case. If several are concerned, and others start, the more the capital which is put in the more the competition. Once started, this process is difficult, and, in fact, under our present economic system, impossible to stop, so that competition becomes more and more intensified, with a consequent drop in profits, and a final result that no profits are left at all. For a time the competing firms will attempt to stop the loss of profit by increased efficiency in working, improvement in technique and processes of manufacture, and by development of machinery. But all these factors gradually become known to their competitors, who themselves adopt them, with the result that all once more come to the same dead level, and are faced with loss of profit. It then becomes obvious that continued competition can only result in bankruptcy, for the theory of the *laissez-faire* school of economists that the position would be righted by the weaker going to the wall in practice does not apply. Many, admittedly succumb, but when the profit margin rises as a result, others come in, this process being made easier by the law of limited liability, by which opportunists are able to gamble with other people's money. Under the present economic system there is only one way out, and that has been universally adopted—the creation of trusts or price-fixing rings, which control the whole industry and by financial resources can hope to prevent newcomers from rushing in, since for a period they can undercut them and prevent an initial success. If the origin of most trusts is examined, it will be found that it is due not so much to the desire to make increased profits, but in order to save the original constituent bodies from ruin. Many will remember the frantic cutting of brick and cement prices from 1900 onwards before the London Brick Company and the cement combine were formed. That the same condition of affairs existed in other industries is common knowledge. In fact, the formation of trusts and price-fixing combines is increasing, and must still increase, to avoid the consequences of what must happen with unrestricted competition.

It may be asked why we succeeded in living so long with a competitive system working apparently successfully. The answer is simple. For the first part of the industrial revolution this country had the lead, and in fact, almost a monopoly, and hence markets were constantly increasing. Later, when other countries had commenced to compete with us, empty parts of the world were still being opened up, and hence markets still increased. So far, then, it was possible to absorb newcomers

That process has now ceased. Almost all nations have become industrialised, and there are very few open spaces of any value left.

For a time the restoration of war damage will create work, but after that the position will be as before and the formation of combines will proceed apace.

That is the general position, and the building industry cannot hope to escape from the consequences of this inevitable law. In fact, it has already taken steps to make itself secure as regards most of its constituent members. It can safely be said that 90 per cent. of the materials used in an ordinary building are controlled by combines, and with regard to the remaining 10 per cent, price variations are so small as to be negligible. It is probable, moreover, that within a few years from the end of the war this last small remnant will also be controlled. In fact, the only person who really competes as regards price in a tender is the builder, and he only as regards his profit. This means that in a tender of, say, £100,000, the competition is not on that amount, or anything like it, but on about £3,000—or less.

Why, then, have the builders not adopted the same remedy as others? For the simple reason that to form a trust is practically impossible; firstly, because direct labour can always be adopted, and, secondly, since plant can be hired and most operations sub-let, it is ludicrously easy for anyone to start as a builder. That men of straw have frequently done so over the last twenty-five years is an indisputable fact, and though they have done themselves, or perhaps we should say their backers, no good, this has not prevented them from lowering prices against others.

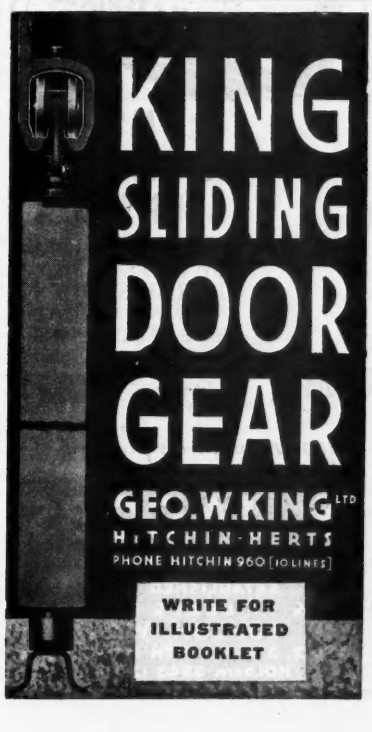
This being so, there would appear to be only two solutions. Firstly, that entrance to the industry should be restricted until it can be shown that more can safely be absorbed; or, secondly, that the builder should become in theory what in many cases he has already become in practice, an organiser and manager, and be paid a fee for his services as is any other consultant. The first cannot be employed except by Government action; the second has much to recommend it. Under such a system technical ability and powers of organisation would be at a premium, and there would be no temptation for evasion of the specification. One thing, however, is perfectly clear. If the present system continues, there can be no health or stability in the industry.

Some may say, "If all this is correct, it is unfortunate for the builder, but why should other sections of the industry worry?" The answer is simple. If contracts are to be carried out through builders, then in any such contract he is in the key position. Through him the architect issues his instructions; by him the labour is paid and its conditions of employment largely conditioned; by him merchants, manufacturers and sub-contractors are paid. He is, in short, the essential conduit through which all else passes. Many of the others, probably, some with justice, consider themselves more important; nevertheless, they function through him. If then, the state of this conduit is unsatisfactory, all will suffer, and the general result cannot be good.

This presumes that the present system will continue. It may not, of course, do so—the builder, or, rather, the general contractor, may be eliminated. He has actually only existed for some 80 years, and in Scotland and the North is by no means universal.

The committee, however, appear to envisage his continuance, but the only thing their report does not deal with is his position. By their silence they would appear to think that it is satisfactory. This is by no means the case. A false boom after the war may for a time conceal the true position, but eventually the national law that unrestricted competition spells ruin, *unless checked*, must prevail.

May I suggest that the committee should study this problem and report on it?



BOOKS RECEIVED.

Henry Yevele. By John H. Harvey. (London: B. T. Batsford, Ltd.) Price 15s. net.

York Monuments. By J. B. Morrell. (London: B. T. Bastford, Ltd.) Price £3 3s.

Heating and Ventilating. 5th Ed. By L. J. Overton. (Manchester: Sutherland Publishing Co., Ltd.) Price 16s. net.

Dilapidation Assessments. By Young and Engel. (London: E. and F. N. Spon, Ltd.) Price 8s. 10d. post free.

World Timbers. Vol. 1. (London: Timber Development Association, Ltd.)

Will Planning Restrict Freedom? By H. J. Laski. (Cheam: The Architectural Press.) Price 6d.

PROBLEMS OF THE INDUSTRY

THE FUTURE OF CONTROLS

MR. H. C. HARLAND, President of the London Master Builders' Association, and Mr. G. H. A. Hughes, Director, were the guests of honour of the South-Eastern Area at a luncheon in the Embassy Rooms, Welling, on Wednesday last week. Mr. R. Baker-Smith, Chairman of the Area, presided. The Area covers the boroughs of Beckenham, Bromley, Bexley, Chislehurst, Crayford, Dartford, Erith, Orpington, Penge and Sidcup.

MR. HARLAND said that as an Association they had been doing all they could to urge upon the Ministry of Works and other Government Departments that if there was work to be done in London it should be done by London builders. They had also been saying to the Government that if they wanted work done they should leave it more to them—the builders—without insisting on control and direction, particularly in regard to hours of work. They had all along been trying to impress on Government Departments that if they wanted the work done they must get down to the real sensible number of hours per week. They had proved by statistics that less work was done in a 60-hours week than was done in a 50-hours week.

MR. HUGHES said that they were trying to instill a greater spirit of confidence and trust among all parties concerned and connected with the building industry. Many of the Government controls from which they were suffering had been necessary, but many had got to go at the earliest possible opportunity. It was for them to try to effect an understanding between industry and the various Ministries. They should try to create a spirit of confidence and real co-operation with them. Their industry had been able to achieve that with the operatives. They had been able to maintain peace in the industry since 1924. That was a record of which their industry was extremely proud.

Mr. Hughes called the attention of the members to the new National Insurance Scheme. This measure called for the closest attention from members. In that scheme provision was made for the State to take over the payment to men injured in industry. Thereby the Workmen's Compensation Act took on a new phase. They might say, "We shall not have any compensation to pay, the State is to do that." But it did not work out that way. The workman who was injured had three alternatives. He could claim under Workmen's Compensation, Employer's Liability, or Common Law. The average working man nowadays had a very good knowledge of the law affecting his conditions of work, and the probability was that there would be more claims under Common Law in the future than at present. And they had to bear in mind that the building industry was the most hazardous of all the industries.

Totnes Police Station.

In connection with the above work, illustrated in our last issue, it should have been stated that the whole of the reinforcement was supplied by the British Reinforced Concrete Engineering Co., Ltd., of Stafford.

Availability of Sheet Lead.

The latest relaxation of the control of lead permits the supply of sheet lead of a substance not exceeding 4 lb. per sq. ft. for use as dampproof courses to solid or cavity walls immediately above ground for new and repair work.

"THE BUILDER" PRICES AND WAGES

Until further notice and in order to devote more space to news, *The Builder* copyright "Prices Current of Materials" and Rates of Wages will be given in the first issue of each month only. Current changes will be given weekly as they occur.

OFFICIAL NOTIFICATIONS

Building Licences.

THE following notice is issued by the Ministry of Supply:—

All applications for building licences should be made on the Ministry of Works form CL1136, obtainable from the Regional Licensing Officers, Ministry of Works, addresses of which are given below.

If the applicant desires the support of Timber Control, the Technical Plywood Section, or the Home Timber Production Department, the completed application form should be sent in the first place to Timber Control, Department 111, Clifton Down Hotel, Bristol, 8, who will consult the Departments concerned.

The application form CL1136 should be accompanied by any necessary plans, estimates and specification, and must include a detailed and priced list of all consequential requirements which will arise if the desired licence is granted.

Possible consequential requirements are additional buildings or materials, constructional or additional operational labour, electrical or other services, machines, boilers, power units, lifting gear, waste removal plant, shafting, pulleys, tools and other equipment, etc. Advice will be given as to any further sanctions required.

This notice defines a new procedure designed only to accelerate consideration by the Ministry of Supply Departments concerned.

ADDRESSES OF REGIONAL LICENSING OFFICERS, MINISTRY OF WORKS.

No. 1. Northern: 2, Sydenham-terrace, Newcastle-on-Tyne. Newcastle 23674.
No. 2. North Eastern: Weetwood Chambers, 93a, Albion-street, Leeds. Leeds 29063/4.
No. 3. North Midland: Government-buildings, Clifton-boulevard, Nottingham. Nottingham 77733.
No. 4. Eastern: Shaftesbury-road, Brooklands-avenue, Cambridge. Cambridge 55206.
No. 5. London: 51-54, Gracechurch-street, London, E.C.3. Mansion House 9855.
No. 6 Southern: Whiteknights-road, Earley, Reading Reading 61431
No. 7. South-Western: 5-6, Gotham Lawn-road, Bristol. Bristol 36841.
No. 8. Wales: 2, Museum-place, Cardiff. Cardiff 9070.
No. 9. Midland: Somerset House, Temple-street, Birmingham. Midland 6661.
No. 10. North-Western: Lancaster House, 80, Princess-street, Manchester Central 6931.
No. 11. Scotland: 9, George-street, Edinburgh. Edinburgh 34621.
No. 12. South-Eastern: Forest-road, Hawkenbury, Tunbridge Wells Tunbridge Wells 2780/8.
No 13. Northern Ireland: H. Ruben, Chamber of Commerce, Court-chambers, Victoria-street, Belfast.

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CONCRETING IN COLD WEATHER

IN reply to a correspondent who asked for advice on the carrying out of concrete work in cold weather, a special correspondent writes as follows:—

Most regulations state that concrete should not be placed at temperatures lower than 40 deg. Fahr. unless precautions are taken to prevent the temperature of the concrete falling below that temperature. Concrete can, however, be laid in cold weather provided precautions are taken. When the weather is not too severe and it is only a matter of protecting the concrete against a night frost or a frost of short duration, it is usually enough to cover it with a tarpaulin. In vertical work the shuttering alone is often sufficient protection. During long spells of freezing weather, however, further precautions must be taken to prevent the concrete from freezing. The addition of 2 lb. of calcium chloride per bag (112 lb.) of cement may be made to the mix; this hastens the setting of the cement and consequently its heat generation during setting. Three or four days after it is placed the concrete should be hard enough to resist the action of frost. Rapid-hardening Portland is also superior to ordinary Portland cement in cold weather, as its quicker gain in strength makes it less liable to be affected by cold weather. Best of all is aluminous cement ("Ciment Fondu"), which attains sufficient strength a few hours after laying to resist freezing temperatures.

Other methods of carrying out concreting in cold weather include the use of braziers, where the work is under cover or where it can be covered (say, by a timber framework covered with tarpaulins), and the heating of the mixing water or the aggregate, or both. A simple method is to use hot mixing water (a temperature of 160 deg. Fahr. is generally used), or to drench the aggregates with hot water immediately before they are gauged. It is also common on large contracts to lay steam pipes through the stock piles of aggregates.

It is, however, only in the case of a long period of very severe weather that anything more is required than the covering of the work with tarpaulins, although the addition of calcium chloride is recommended, because it is cheap and causes the concrete to harden, and thus pass the danger period, in a shorter time than is the case with ordinary or rapid-hardening Portland cement.

THE SCOTTISH BUILDER

NEW BUILDINGS

CAMBUSLANG.—Plans prepared for pavilion and baths, for which the architect is Robert Gray, District Council Offices.

GLASGOW.—Plans prepared for alterations and additions, for which the architects are W. & J. Martin, 63, Brunswick-st., Glasgow.

GLASGOW.—Plans prepared for alterations and additions for Mavor & Coulson, Ltd., for which the architect is George A. Boswell, 256, West George-st., Glasgow.

LESMAHAGOW.—New stores and workshops to be erected, for which the architect is James Boyd, 25, South Bridge-st., Airdrie.

FUTURE CONSTRUCTION

CONTRACTS OPEN

For some contracts still open, but not included in this list, see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

DECEMBER 4.

Brighton T.C.—Erection of prefabricated building at Rottingdean. B.E. and S. Dep. £3 3s.

DECEMBER 7.

Cheltenham T.C.—Erection of 4 experimental houses at Kipling-rd., St. Mark's. G. G. Marsland, B.E. Dep. £2 2s.

DECEMBER 8.

*†**Kesteven (Lincs) C.C.**—Construction of house at Deeping St. James. C. B. Metcalfe (F.). County A., County Offices, Sleaford, Lincs.

DECEMBER 9.

Cookstown R.D.C.—Repairs to 179 cottages. J. M'Cammon, C., Boardroom, Cookstown. Dep. £3 3s.

DECEMBER 11.

Saltburn-by-the-Sea U.D.C.—Reconstruction of pier. T. Grant, E. and S. Dep. £2 2s.

NO DATE.

Rugby T.C.—Erection of temporary office buildings at "The Lawn," Newbold-rd. Inquiries invited from manufacturers of prefabricated sectional buildings. Inquiries to B.E. and S.

PAINTING, ELECTRIC LIGHTING, HEATING, ETC.

DECEMBER 2.

Edinburgh T.C.—Painting work at Gorgie markets and slaughterhouses. City A., City-chbrs.

DECEMBER 11.

*Beckenham T.C.—Steam, hot and cold water services and heating services at canteen kitchen and boiler house at Marian Vian school. J. Dove, A.M.Inst.C.E., B.E. Dep. £2.

ROADS, SEWERAGE AND WATER WORKS

DECEMBER 2.

Chapel-en-le-Frith R.D.C.—For providing, laying and jointing of about 250 lin. yds. of 3-in. spun iron pipes, etc. Brady and Partington, chartered civil engineers, Chapel-en-le-Frith. Dep. £1 1s.

South-West Lancashire Group.—Construction of roads and sewers. City E. and S., Municipal-bldgs., Dale-st., Liverpool, 2. Dep. £2 2s.

DECEMBER 4.

Thirsk R.D.C.—For laying approx. 3,530 yds. of 3-in. cast-iron water main. C., Council Offices, Sowerby, Thirsk.

DECEMBER 7.

Swansea C.B.—Construction of roads and sewers. J. B. Bennett, A.M.Inst.C.E., B.E. and S. Dep. £2 2s.

PUBLIC APPOINTMENTS

DECEMBER 9.

*Bolton E.C.—Head of Building Dept. £500-£25-£650, plus £52 bonus. G. A. Cox, D. of E., Ed. Offices, Nelson-sq.

*Dartford R.D.C.—Architect and Housing Superintendent. £600-£25-£800 p.a., inclusive of bonus. E. James, C., Council Offices, West Hill, Dartford.

DECEMBER 21.

*Shropshire† C.C.—County Planning Officer. £800-£25-£900 p.a., plus £33 16s. bonus. Application forms from County S., County-bldgs., Shrewsbury.

GENERAL BUILDING WORK

Accrington.—T.C. propose provision of maternity home.

Alderley Edge.—U.D.C. approved conversion of "Lowood," Darley-la., into three flats.

Altrincham.—T.C. approved: Extensions of buildings, for J. F. Mosley, The Laurels, Barrington-rd.; extensions to offices, for Yarwoods (Altrincham), Ltd., Moss Bridge; adaptation of "York House," Brook's-dr., Timperley, for school, for Mrs. F. Gayter.

Bacup.—T.C. to erect 176 houses at Thorn & Huttock (No. 1) estates.

Barnsley.—B.E. to prepare plans for maternity home.

Bewdley.—T.C. propose 50 houses at Bark Hill.

Bromsgrove.—U.D.C. approved erection of temporary cinema at Meadow-rd., Catshill, for M. Holloway.

Chorley.—T.C. propose houses at Moor-rd. and Eves Mount-rd.

Coventry.—Health Committee propose conversion of "Avenue House," Stretton-on-Dunsmore, into residential nursery.

Dalton-in-Furness.—U.D.C. approved alterations to brickworks, for Furness Brick & Tile Co., Ltd., Hindpool, Barrow-in-Furness.

Gateshead.—T.C. to carry out alterations at central police station, Swinburne-st. Plans by B.E.

Hinckley.—U.D.C. propose development of site at Castle-st., for Town Hall with Assembly Rooms.

Kidderminster.—T.C. propose provision for 'bus station.

Leyland.—U.D.C. propose to acquire "Broadfield" for conversion into Council Offices.

Lichfield.—Staffs E.C. propose erection of prefabricated building as extension to Friary High school for Girls.

Manchester.—P. Cummings (F.), 25, Cross-st., is architect for erection of Synagogue at Jackson's-row, for Trustees of Congregation of British Jews. F. Jones and H. A. Dalrymple (F. & A.), 178, Oxford-rd.; Chorlton-upon-Medlock, are architects for extensions to works.

Middlewich.—British Legion members propose new headquarters.

Nantwich.—R.D.C. preparing plans for erection of 948 houses.

Newcastle-on-Tyne. — Marshall, Tweedy & Bourn, Grainger House, Blackett-st., are architects for extensions to bakery, for Embleton & Son. Hetherington & Wilson, County-chbrs., Westgate-rd., prepared plans for evaporator plant house. City architect prepared plans for conversion of several premises into flats.

Newcastle-on-Tyne.—City Council to reconstruct underground public conveniences at Shields-rd. Plans by City E.

Nuneaton.—E.C. propose senior school at Stockingford.

Oldham.—E.C. propose junior school at Clarksfield.

Oswestry.—T.C. preparing plans for houses at Shrewsbury-rd.

Rawtenstall.—T.C. propose Health Clinics at Crawshawbooth, Waterfoot and Rawtenstall.

Richmond (Yorks).—T.C. preparing plans for 50 houses.

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Rochdale.—T.C. propose 450 houses at Greave and Newbold estates.

Sale.—T.C. propose development of land at Beech Farm Housing estate for erection of 400 houses, community centre and branch library.

Sedgley.—U.D.C. propose housing site at Lower Gornal.

Sheffield.—Safety in Mines Research Board, 1, Portobello-st., preparing plans for extensions at research station.

Stockport.—T.C. approved erection of commercial and passenger garage, for Melba Motors, Ltd., 109, Gorton-rd., Reddish.—Governors of Stockport Infirmary, Wellington-rd. South, propose adaptation of "Poise House," Hazel-gr., as extensions to Infirmary.

Stockton-on-Tees.—M.H. sanctioned extensions at Robson maternity home, at £2,809.

Staffs.—Standing Joint Committee propose police station at Badger-st., Upper Gornal.

Stoke-on-Trent.—T.C. approved extensions at City Maternity Hospital, at £6,989, for Health Committee.

Sunderland.—Cleansing Committee propose conveniences and tramway shelter at Hylton-rd., at £810.

Warwickshire.—War Agricultural Committee propose Farm Institute.

West Hartlepool.—Bell & Bell, Whitby-st., are architects for converting premises at Hart-la. into wholesale dairy for Ushers' Wholesale Dairies, Ltd.

Wilmslow.—Building Committee propose community centre, at £40,000.

Winsford.—U.D.C. approved erection of 185 houses.

BRITISH RESTAURANTS AND CANTEENS

Cumberland.—C.C. to erect canteen kitchen at Borrowdale Voluntary school. Plans by J. H. Haughan, County A., 4, Alfred-st. North, Carlisle.

Irthlingborough.—U.D.C. approved canteen for J. Shortland, Ltd.

TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government departments.*

Droitwich.—Dining centre at Sytchampton school, for Worcestershire E.C. H. Rowe & Son, Acting County Architects, 38, Foregate-st., Worcester: *G. Pardoe & Sons, 27, Waterworks-rd., Worcester.

Edinburgh.—Work in all trades for erection of standard hut at St. Anthony's R.C. school, for T.C. E. J. MacRae (F.), City Architect, Edinburgh. Quantities by Darge & Thomas, F.S.I., 10, Wemyss-pl., Edinburgh: *A. H. Porter & Co., 125, Fountainbridge, Edinburgh, £894.

Lancashire.—Erection of central kitchen at Senior school, Blackrod, for E.C. A. T. Nicholson (F.), County A., County-bldgs., Fishergate-hill, Preston: *Baxendale Bros. (Chorley), Ltd., Victoria Saw Mills, Chorley, £2,419.

¶**London (Air Ministry).**—List of contracts to value of £500 or over for week ended November 18:

General maintenance work: R. M. Thompson, Ltd., Leeds 2; Geo. Foster (Clts.), Ltd., Broadway, Worcs; Henry Kent (Builders), Ltd., London, S.E.13.

Painting work: Clark & Fenn, Ltd., London, S.W.4; Fields, Ltd., Reading.

Electrical work: Colston Electrical Co., Ltd., Bristol 1.

Drainage work: Clark Bros., Swindon, Wilts.

Civil engineering work: Wm. Tawse, Ltd., Aberdeen.

Erection of structural steelwork: Gardiner, Sons & Co., Ltd., Bristol 2.

Surfacing work: Wm. Tawse, Ltd., Aberdeen.

¶**London (Ministry of Works).**—Contracts placed by M.O.W. during week ending November 16:—

Caernarvonshire: Building work, Edward Jones, 3, The Arcade, Penmaenmaur.

Cornwall: Building work, J. C. Parkhouse, Higher Wharf, Bude.

Lancs: Building work, R. Stanley Ellison, Windle City, St. Helens, Lancs.

Warwickshire: Building work, W. D. Randall, Hartshill, Nuneaton.

Yorks: Building work, A. J. Pugh & Co., Kilnhurst-rd., Rawmarsh, Rotherham.

¶**London (War Dept.).**—Works contracts placed by War Dept. for week ended November 11:—

Perthshire: Roadwork, Wm. Briggs & Sons, Ltd., Dundee.

Yorks: Miscellaneous work, J. T. Tarran & Son, Ltd., Hutton Rudby, Yorks.

Derbyshire: Painting work, Fred Labbett, Nottingham.

Shropshire: Concrete work, Concrete, Ltd., Stourton, Leeds.

Pembrokeshire: Steelwork, J. Parks & Son, Northwich, Ches.
Carmarthenshire: Building work, A. B. Brooker (Contractors), Ltd., Cardigan; miscellaneous work, A. N. Coles (Contractors), Ltd., Cardiff.

Kent: Painting work, C. J. Else & Co., Ltd., Matlock, Derbyshire; miscellaneous work, F. Parham, Ltd., Gillingham, Kent.

Hampshire: Miscellaneous work, A. J. Dunning & Sons, Weyhill, Hants.

Manchester.—Reinstatement of structural work at Trafford Park Hotel, Ashburton-rd., for Cornbrook Brewery Co., Ltd., Ellesmere-st. E. A. Newton (A.), architect, Rutherford-chbrs., Bow-la., Princess-st.: *Donald Macdonald, Ltd., Stretford-rd., Trafford Bar, Old Trafford, Manchester 16.

Rochdale.—Construction of roads and sewers for advance preparation of housing sites, for Rochdale Group of local authorities. S. H. Morgan, B.S.: *J. Gerrard & Sons, Ltd., Pendlebury-rd., Swinton, Manchester.

Stretford.—Alterations for dining centres at Lostock and Trafford Park schools, for E.C. E. Parker, B.E.: *Smith & Briggs, Ltd., Chester-rd., Old Trafford, Manchester 16.

Sunderland. — Conversion of premises at Suffolk-st., as central meals depot, for E.C.: *Direct labour by Education Works Dept., £3,953.

West Hartlepool.—Erection of sculleries at Ward Jackson and Oxford-st. schools, for E.C.: *R. Rennie & Sons, Hartlepool.

Wolverhampton.—Erection of experimental houses at Oldfallings-la., Bushbury: *Tarmac, Ltd., Ettingshall, Wolverhampton.

York.—Repairs and adaptations at 2, Bridge-st., 22a, Huntingdon-rd., and 8, 9 and 10, Tower-st., for T.C. C. J. Minter, City E. and architect:—

No. 2, Bridge-st.: *R. J. Pulleyn & Sons, 29, Clarence-st., York, £358.

8, 9 and 10, Tower-st.: *G. H. Robinson, 51, Holgate-rd., York, £588.

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